

## LA-UR-13-22492

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**Title:** 2012 Update to the Site Discharge Pollution Prevention Plan, Revision 1 Los Alamos National Laboratory NPDES Permit No. NM0030759, May 1, 2013 Sandia/Mortandad Watershed Receiving Waters: Sandia Canyon, Cañada del Buey, Mortandad Canyon, and Ten-Site Canyon Volume 2

**Author(s):** Veenis, Steven J.

**Intended for:** Individual Permit Pollution Prevention Team, Public, EPA, NMED  
Report  
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# 2012 Update to the Site Discharge Pollution Prevention Plan, Revision 1

Los Alamos National Laboratory  
NPDES Permit No. NM0030759  
LA-UR-13-22492 • May 1, 2013

## Sandia/Mortandad Watershed

Receiving Waters:  
Cañada del Buey, Mortandad Canyon, Sandia Canyon, and Ten Site Canyon

**Volume 2**





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## **65.0 S-SMA-0.25: SWMUs 03-013(a) and 03-052(f)**

### **65.1 Site Descriptions**

Two historical industrial activity areas are associated with S001, S-SMA-0.25: Sites 03-013(a) and 03-052(f).

Solid Waste Management Unit (SWMU) 03-013(a) is a 1500-ft-long corrugated metal pipe (CMP) storm drain that served building 03-0038. The storm drain ran underground around building 03-0038, east along the south side of the Otowi Building (building 03-0261) and connected to four other storm drains before daylighting 100 ft east of the Otowi Building where it became an open concrete- and rock-lined ditch. The open drain continued past transportable office buildings (buildings 03-1616 and 03-1617) and passed beneath streets and sidewalks to a point northeast of the Oppenheimer Study Center (building 03-0207) where it discharged to the SWMU 03-052(f) outfall before draining into Sandia Canyon.

Most of the CMP associated with SWMU 03-013(a) was removed in 2004 to accommodate the construction of the National Security Science Building (03-1400) and a new parking structure (03-1402) east of the Otowi Building. The CMP was managed as nonhazardous/nonradioactive industrial waste. Inspection of the drainline trench showed no evidence of a release from the drainpipe. A new storm drainline was installed west of SWMU 03-052(f) to manage storm water runoff from the new parking structure. The new storm drain discharges to SWMU 03-052(f). Potential contaminants associated with industrial materials historically managed at this Site are metals and petroleum products.

SWMU 03-052(f) is a formerly permitted outfall (U.S. Environmental Protection Agency [EPA] 03A023) that received wastewater from floor drains [Area of Concern (AOC) 03-013(b)], sinks, water fountains, and a storm drain [SWMU 03-013(a)], which served building 03-0038 until 1987 when the drains in building 03-0038 were rerouted to the Technical Area 03 (TA-03) sanitary sewer system. Stoddard solvents, dry acid, and caustic materials from the maintenance shop were discarded through sinks and floor drains to this outfall. Spent paint solvents and cutting oils contaminated with machined beryllium particles may also have been released to the floor drains during the 1960s and 1970s. In addition, cooling water for welding torches was discharged directly to the drains. The first spill was approximately 200 gal. of a water-waste oil mixture that was discharged when an automatic compressor blowdown mechanism failed. A second spill from a ruptured air-compressor oil line resulted in the release of approximately 1 qt of compressor oil to the drain. This spill produced an oily sheen on the surface of the water at the SWMU 03-052(f) outfall. A third spill occurred when approximately 15 gal. of diesel fuel was released from a ruptured truck fuel line into the utilities construction trench between buildings 03-1793 and 03-1794. On the same day, a clay sewer pipe in the utility trench broke, releasing approximately 2000 gal. of wastewater into the excavation. A sump was used to remove the wastewater from the excavation, and the wastewater was discharged to SWMU 03-052(f). The diesel-contaminated asphalt and soil were removed and disposed of. Runoff from parking lots and the surrounding areas also discharges to the outfall. Outfall 03A023 was removed from the National Pollutant Discharge Elimination System (NPDES) permit on July 11, 1997. Potential contaminants associated with industrial materials historically managed at this Site are volatile organic solvents, petroleum products, and metals included in discharges from the maintenance contractor's shop in building 03-38 and three reported petroleum hydrocarbon spills.

The project map (Figure 65-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

A recent review of SWMU/AOC boundaries in the Potential Release Site (PRS) Database determined that the Site boundary for SWMU 03-052(f) is inaccurate. Los Alamos National Security, LLC (LANS) has submitted a letter to the New Mexico Environment Department (NMED) requesting approval of proposed boundary updates. The accurate proposed boundary is shown with a dotted line on the project map (Figure 65-1). This boundary was used for corrective action planning and sampler location. Upon NMED approval, the proposed dotted boundary line on the project map will be replaced with a solid line and updated on the Project Maps page of the NPDES Permit No. NM0030759 (hereafter, the IP) website. This change will also be incorporated into the next Site Discharge Pollution Prevention Plan (SDPPP) update.

### 65.2 Control Measures

Run-on contributions to this site monitoring area (SMA) are significant and difficult to control. A large storm system captures roof drains, roads, and parking areas from approximately 50% of TA-03. This run-on source also includes outfalls from the Multi-Sector General Permit—permitted TA-03-38; a 40-in. and a 24-in. CMP discharge onto the SMA. These run-on sources are controlled but not diverted. Run-on associated with NM 501 is routed north of the SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 65-1).

**Table 65-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
S00102010002	Established Vegetation - Grasses and Shrubs			X		CB
S00102020006	Established Vegetation - Forested/Needle Cast			X		CB
S00104060007	Channel/Swale - Riprap	X		X		CB
S00104060010	Channel/Swale - Riprap		X	X		B
S00107010008	Gabions - Gabions		X		X	CB
S00107020003	Gabions - Gabion Blanket		X	X		CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

Enhanced control measures will be installed in the second quarter of 2013 as part of corrective action.

### 65.3 Storm Water Monitoring

SWMUs 03-013(a) and 03-052(f) are monitored within S-SMA-0.25. Following the installation of baseline control measures, a baseline storm water sample was collected on July 28, 2011, and August 15, 2011 (Figure 65-2 and 65-3). Analytical results from this sample yielded four target action level (TAL) exceedances:

- Copper concentrations of 9.7 and 10.9 µg/L (maximum TAL [MTAL] is 4.3 µg/L),
- Zinc concentrations of 52.9 and 74.4 µg/L (MTAL is 42 µg/L),
- Gross-alpha activity of 28.1 pCi/L (average TAL [ATAL] is 15 pCi/L), and
- Polychlorinated biphenyl (PCB) concentration of 50 ng/L (ATAL is 0.6 ng/L).



These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Compliance Order on Consent (Consent Order) investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

*SWMU 03-013(a)*: Potential contaminants associated with industrial materials historically managed at this Site are metals and petroleum products.

- **Copper**—Copper was detected at a maximum concentration 10 times above background value (BV) in soil samples collected during a 1994 Resource Conservation and recovery Act (RCRA) facility investigation (RFI).
- **Zinc**—Zinc was detected at a maximum concentration 1.8 times BV in soil samples collected during a 1994 RFI.
- **PCBs**—PCBs were detected with a maximum concentration 2% of the residential soil screening level (SSL) in RFI samples.
- **Gross alpha**—RFI samples were not analyzed for alpha-emitting radionuclides because they were not identified as potential contaminants at this Site.

In summary, copper and zinc are known to be associated with industrial materials historically managed at this Site and were detected above BVs, although zinc was only slightly above BV. Based on site history and previous sampling results, the Site may be a source of copper and zinc above MTALs in storm water. PCBs are not known to be associated with industrial materials historically managed at the Site and were detected at low concentrations well below residential SSLs. Based on site history and previous sampling results, the Site is an unlikely source of PCBs above ATAL in storm water. Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. Based on site history, the Site is an unlikely source of adjusted gross alpha above ATAL in storm water.

*SWMU 03-052(f)*: Potential contaminants associated with industrial materials historically managed at this Site are volatile organic solvents, petroleum products, and metals included in discharges from the maintenance contractor’s shop in building 03-38 and three reported petroleum hydrocarbon spills.

- **Copper**—Copper was detected at a maximum concentration 1.8 times BV in soil samples collected during the 2009 Consent Order investigation.
- **Zinc**—Zinc was detected at a maximum concentration 4.1 times BV in soil samples collected during the 2009 Consent Order investigation.
- **PCBs**—PCBs were detected at a maximum concentration 11% of the residential SSL in Consent Order soil samples.
- **Gross alpha**—Alpha-emitting isotopes of americium, plutonium, and uranium were not detected above BVs/fallout values (FVs) in Consent Order soil samples.

In summary, copper and zinc are known to be associated with industrial materials historically managed at this Site and were detected above BVs, although only slightly above BVs. Based on site history and previous sampling results, the Site may be a source of copper and zinc above MTALs in storm water. PCBs are not known to be associated with industrial materials historically managed at the Site and were detected at low concentrations well below residential SSLs. Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site and alpha-emitting isotopes of americium, plutonium, and uranium were not detected above BVs/FVs. Based on site history and previous sampling results, the Site is an unlikely source of PCBs and adjusted gross alpha above ATALs in storm water.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as upper tolerance limits (UTLs) using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figures 65-2 and 65-3. UTLs developed for urban settings were derived from runoff from developed landscapes on the Pajarito Plateau, including buildings, parking lots, roads, and associated features, and are labeled “Developed Background” in Figures 65-2 and 65-3.

Monitoring location S-SMA-0.25 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as from landscape consisting of Bandelier Tuff sediment. Metals including copper and zinc are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Copper—The copper UTL from developed urban landscape storm water run-on is 32.3 µg/L; the copper UTL for storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L. The copper results from 2011 are between these two values.
- Zinc—The zinc UTL from developed urban landscape storm water run-on is 1120 µg/L; the zinc UTL for storm water containing sediments derived from Bandelier Tuff is 109 µg/L. The zinc results from 2011 are less than both of these values.
- Gross alpha—The gross-alpha UTL from developed urban landscape storm water run-on is 32.5 pCi/L; the gross-alpha UTL for storm water containing sediments derived from Bandelier Tuff is 1490 pCi/L. The 2011 gross-alpha result is less than both of these values.
- PCB—The PCB UTL from developed urban landscape storm water run-on is 98 ng/L; the PCB UTL for storm water containing sediments derived from Bandelier Tuff is 11.7 ng/L. The PCB result from 2011 is between these two values.

All the analytical results for these samples are reported in the 2011 Annual Report.

#### **65.4 Inspections and Maintenance**

RG121.9 recorded two storm events at S-SMA-0.25 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 65-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23446	06-07-2012
Storm Rain Event	BMP-25247	07-24-2012
Storm Rain Event	BMP-28704	10-23-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 65-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-25866	Installed riprap S00104060010 to both sides of gabion blanket S00107020003.	08-01-2012	8 day(s)	Maintenance conducted in timely manner.

### 65.5 Compliance Status

The Sites associated with S-SMA-0.25 are high priority Sites. Corrective action is to be certified complete within 3 yr of the effective date of the IP (i.e., November 2015).

**Table 65-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 03-013(a)	Corrective Action Initiated	Corrective Action Initiated	Initiated 10-20-2011
SWMU 03-052(f)	Corrective Action Initiated	Corrective Action Initiated	Initiated 10-20-2011

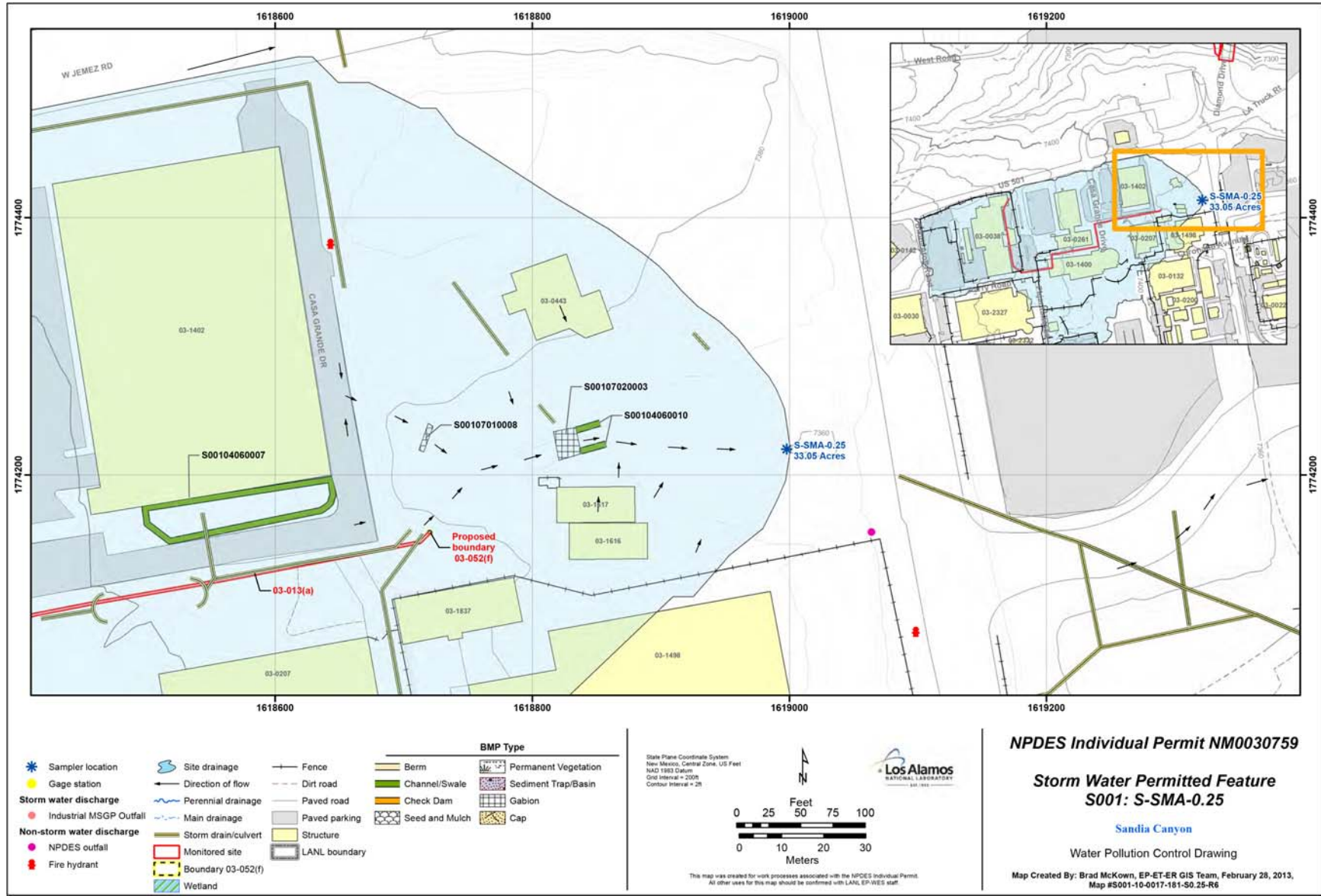
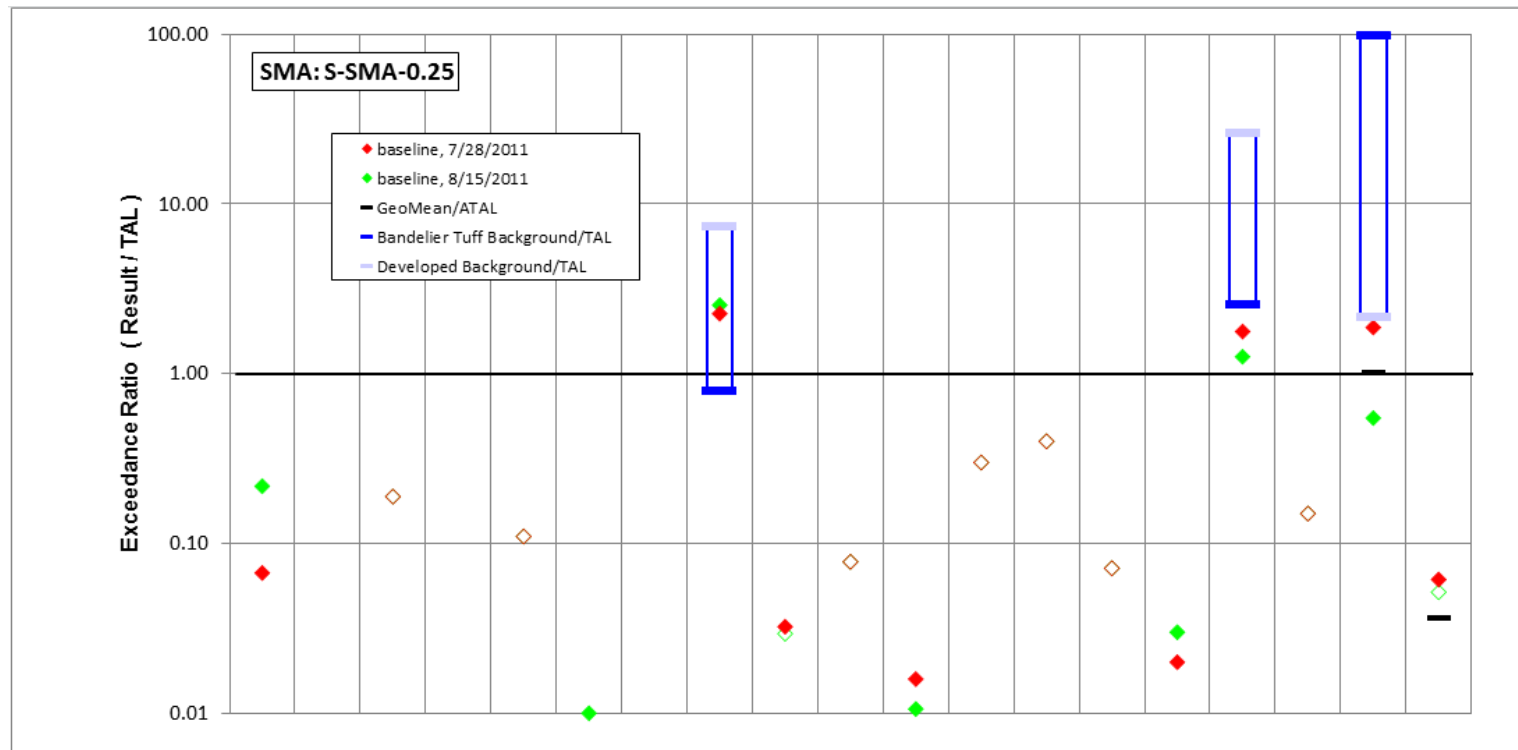


Figure 65-1 S-SMA-0.25 location map

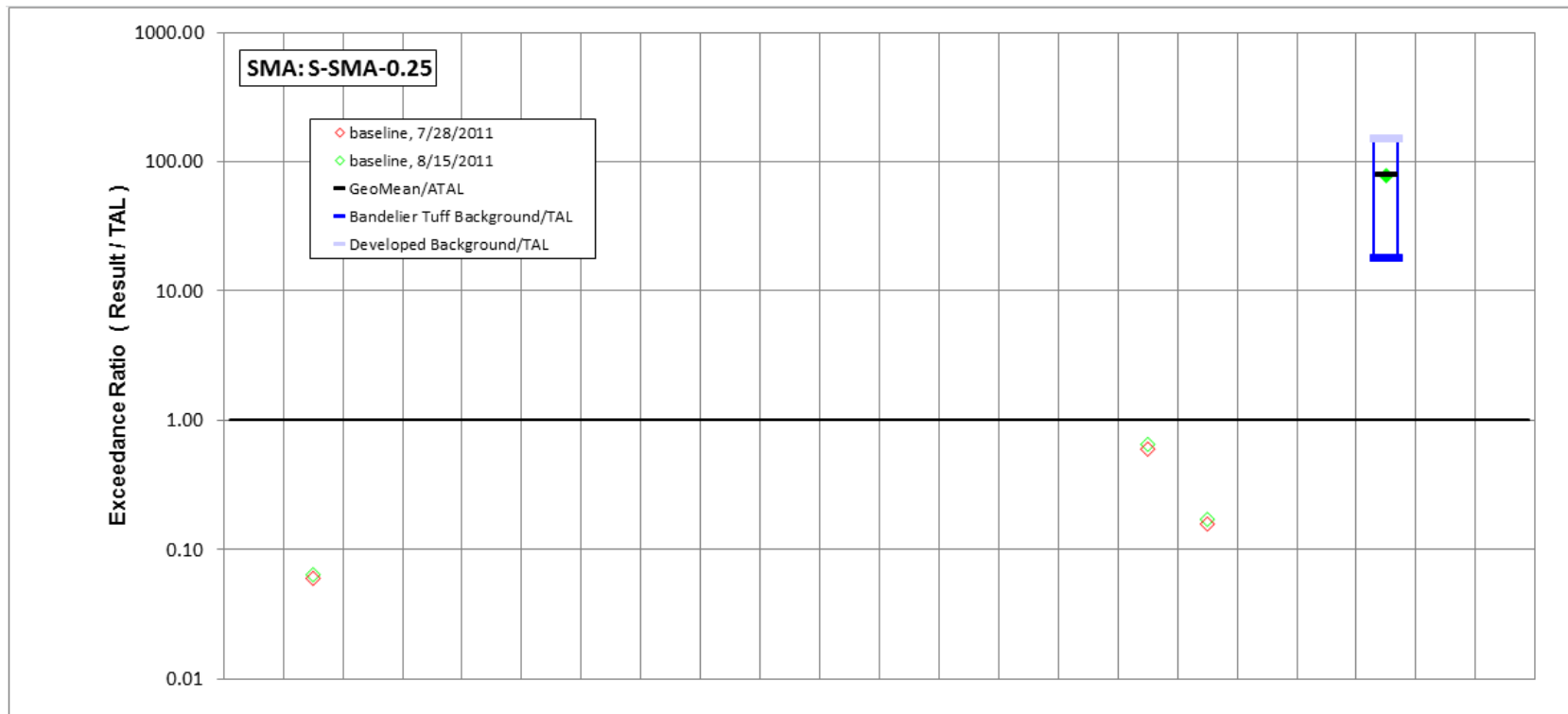




	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	<b>Copper</b>	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	<b>Zinc</b>	Cyanide, weak acid dissociable	<b>Gross alpha</b>	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
<b>8/15/2011 result</b>	163	<i>1</i>	1.7	26.2	<i>0.11</i>	2.1	1.2	<b>10.9</b>	0.5	<i>0.06</i>	1.8	1.5	0.2	0.45	3	<b>52.9</b>	0.002	8.22	1.55
result / TAL	0.22	<i>0.002</i>	0.19	0.0052	<i>0.11</i>	0.01	0.0012	<b>2.5</b>	0.029	<i>0.078</i>	0.011	0.3	0.4	0.071	0.03	<b>1.3</b>	0.15	0.55	0.052
<b>7/28/2011 result</b>	50.3	<i>1</i>	1.7	34.5	<i>0.11</i>	2	1	<b>9.7</b>	0.55	<i>0.06</i>	2.7	1.5	0.2	0.45	2	<b>74.4</b>	0.002	<b>28.1</b>	1.84
result / TAL	0.067	<i>0.002</i>	0.19	0.0069	<i>0.11</i>	<i>0.01</i>	<i>0.001</i>	<b>2.3</b>	0.032	<i>0.078</i>	0.016	0.3	0.4	0.071	0.02	<b>1.8</b>	0.15	<b>1.9</b>	0.061

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

**Figure 65-2 Inorganic analytical results summary plot for S-SMA-0.25**



	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	Total PCB	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	ATAL	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	MTAL	-	-	ATAL	-	-
std value	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	5	19	-	-	6E-04	-	-
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
<b>8/15/2011 result</b>	-	<i>0.32</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	<i>3.26</i>	<i>3.26</i>	-	-	<b>0.05</b>	-	-
<b>result / TAL</b>	-	<i>0.064</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	<i>0.65</i>	<i>0.17</i>	-	-	<b>78</b>	-	-
<b>7/28/2011 result</b>	-	<i>0.3</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	<i>3</i>	<i>3</i>	-	-	-	-	-
<b>result / TAL</b>	-	<i>0.06</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	<i>0.6</i>	<i>0.16</i>	-	-	-	-	-

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

**Figure 65-3 Organic analytical results summary plot for S-SMA-0.25**

## 66.0 S-SMA-1.1: SWMU 03-029

### 66.1 Site Descriptions

One historical industrial activity area is associated with S002, S-SMA-1.1: Site 03-029.

SWMU 03-029 is a 30-ft × 70-ft purported former landfill located approximately 300 ft south of building 03-271 near the rim of Sandia Canyon at TA-03. This landfill reportedly received excess asphalt from the batch plant and was subsequently covered with sand. In 2005, ground-penetrating radar (GPR) and electromagnetic (EM) surveys were performed in an attempt to locate the landfill. A total of 12 trenches were excavated into bedrock based on the GPR and EM survey results; however, no buried asphalt was encountered. Potential contaminants associated with industrial materials historically managed at this Site are petroleum products associated with asphalt. Potential contaminants PCBs and metals are associated with industrial materials historically managed at nearby Sites, including SWMU 03-059 and AOC 03-003(n), both of which are located to the north and upgradient.

The project map (Figure 66-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 66.2 Control Measures

This SMA is impacted by three culverts that capture storm water runoff from parking areas and roads. The SMA is also impacted by sheet flow run-on from the parking area south of building 03-0271. Planned controls are designed to fortify and increase sediment retention. A corrective action plan is being developed for this SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 66-1).

Enhanced controls were installed and certified on December 13, 2012, as part of corrective action. Photographs of the enhanced controls are available at <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/construction-certifications.php>.



S-SMA-1.1, Rock Check Dam, S00206010008 (photo ID 29464-9)

**Table 66-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
S00203010018	Berms - Earthen		X		X	EC
S00203090017	Berms - Curbing	X			X	EC
S00204040016	Channel/Swale - Culvert	X		X		EC
S00204060006	Channel/Swale - Riprap	X		X		CB
S00204060014	Channel/Swale - Riprap	X		X		EC
S00204060015	Channel/Swale - Riprap	X		X		EC
S00204060019	Channel/Swale - Riprap	X		X		EC
S00205020013	Sediment Traps and Basins - Sediment Basin		X		X	EC
S00206010008	Check Dam - Rock	X			X	CB
S00207010003	Gabions - Gabions		X		X	CB
S00207020005	Gabions - Gabion Blanket	X		X		CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

### 66.3 Storm Water Monitoring

SWMU 03-029 is monitored within S-SMA-1.1. Following the installation of baseline control measures, a baseline storm water sample was collected on August 4, 2011, and September 4, 2011 (Figures 66-2 and 66-3). Analytical results from this sample yielded three TAL exceedances:

- Copper concentrations of 5.2 and 5.8 µg/L (MTAL is 4.3 µg/L),
- Gross-alpha activity of 17.1 pCi/L (ATAL is 15 pCi/L), and
- PCB concentrations of 90 and 110 ng/L (ATAL is 0.6 ng/L).

These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

*SWMU 03-029:* Potential contaminants associated with industrial materials historically managed at this Site are petroleum products associated with asphalt. Potential contaminants PCBs and metals are associated with industrial materials historically managed at nearby Sites, including SWMU 03-059 and AOC 03-003(n), both of which are located to the north and upgradient.

- Copper—Copper was detected at a maximum concentration 2.8 times BV in soil samples collected during the 2009 Consent Order investigation.
- PCBs—PCBs were detected at a maximum concentration 3% of the residential SSL in Consent Order soil samples.



In summary, copper is not known to be associated with industrial materials historically managed at this Site and was detected only slightly above BV. PCBs are not known to be associated with industrial materials historically managed at the Site and were detected at low concentrations well below residential SSLs. Based on site history and previous sampling results, the Site is an unlikely source of copper above MTAL and PCBs above ATAL in storm water.

Consent Order sampling was performed in 2009 at adjacent Site SWMU 03-059, which is located upgradient of SWMU 03-029 within the S-SMA-1.1 drainage area. SWMU 03-059 is not included in the IP. PCBs were detected at a maximum concentration 11 times the residential SSL in Consent Order soil samples from SWMU 03-059.

PCBs are known to be associated with industrial materials historically managed at SWMU 03-059 and were detected substantially above residential SSLs. Based on site history and previous sampling results, SWMU 03-059 is a likely source of PCBs above ATAL in storm water.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figures 66-2 and 66-3. UTLs developed for urban settings were derived from runoff from developed landscapes on the Pajarito Plateau, including buildings, parking lots, roads, and associated features, and are labeled “Developed Background” in Figures 66-2 and 66-3.

Monitoring location S-SMA-1.1 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as from landscape consisting of Bandelier Tuff sediment. Metals including copper are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals. PCBs are associated with building materials including paint, caulking, asphalt, solvents, transformers, and cutting oils.



S-SMA-1.1, Rock Check Dam, S00206010008 (photo ID 17783-2)

- Copper—The copper UTL from developed urban landscape storm water run-on is 32.3 µg/L; the copper UTL for storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L. The copper results from 2011 are between these two values.
- Gross alpha—The gross-alpha UTL from developed urban landscape storm water run-on is 32.5 pCi/L; the gross-alpha UTL for storm water containing sediments derived from Bandelier Tuff is 1490 pCi/L. The 2011 gross-alpha result is less than both of these values.
- PCB—The PCB UTL from developed urban landscape storm water run-on is 98 ng/L; the PCB UTL for storm water containing sediments derived from Bandelier Tuff is 11.7 ng/L. One PCB result from 2011 is greater than both values and the other result is between them.

All the analytical results for these samples are reported in the 2011 Annual Report.

The monitoring station within S-SMA-1.1 was relocated on November 9, 2012, and is situated approximately 100 ft north of the original sampler location. The new location of the sampler is positioned below the enhanced controls and will provide a more representative sample of storm water discharge from SWMU 03-029 and the newly installed enhanced controls. Sampler coordinates and SMA drainage area are updated in Attachment 4.

#### 66.4 Inspections and Maintenance

RG121.9 recorded two storm events at S-SMA-1.1 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 66-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Visual	COMP-20991	03-28-2012
Annual Erosion Evaluation	COMP-22636	05-08-2012
Storm Rain Event	BMP-25248	07-24-2012
Construction	COMP-28886	10-17-2012
Storm Rain Event	BMP-28705	10-23-2012
Construction	COMP-29133	10-24-2012
Construction	COMP-28887	10-30-2012
Construction	COMP-29438	11-05-2012
Enhanced Control Measure Verification	BMP-29464	11-07-2012
Construction	COMP-29478	11-07-2012

There were no maintenance activities conducted at S-SMA-1.1 in 2012.

#### 66.5 Compliance Status

The Site associated with S-SMA-1.1 is a high priority Site. Corrective action is to be certified complete within 3 yr of the effective date of the IP (i.e., November 2015).

**Table 66-3 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 03-029	Corrective Action Initiated	Enhanced Control Corrective Action Monitoring	Initiated 11-27-2012

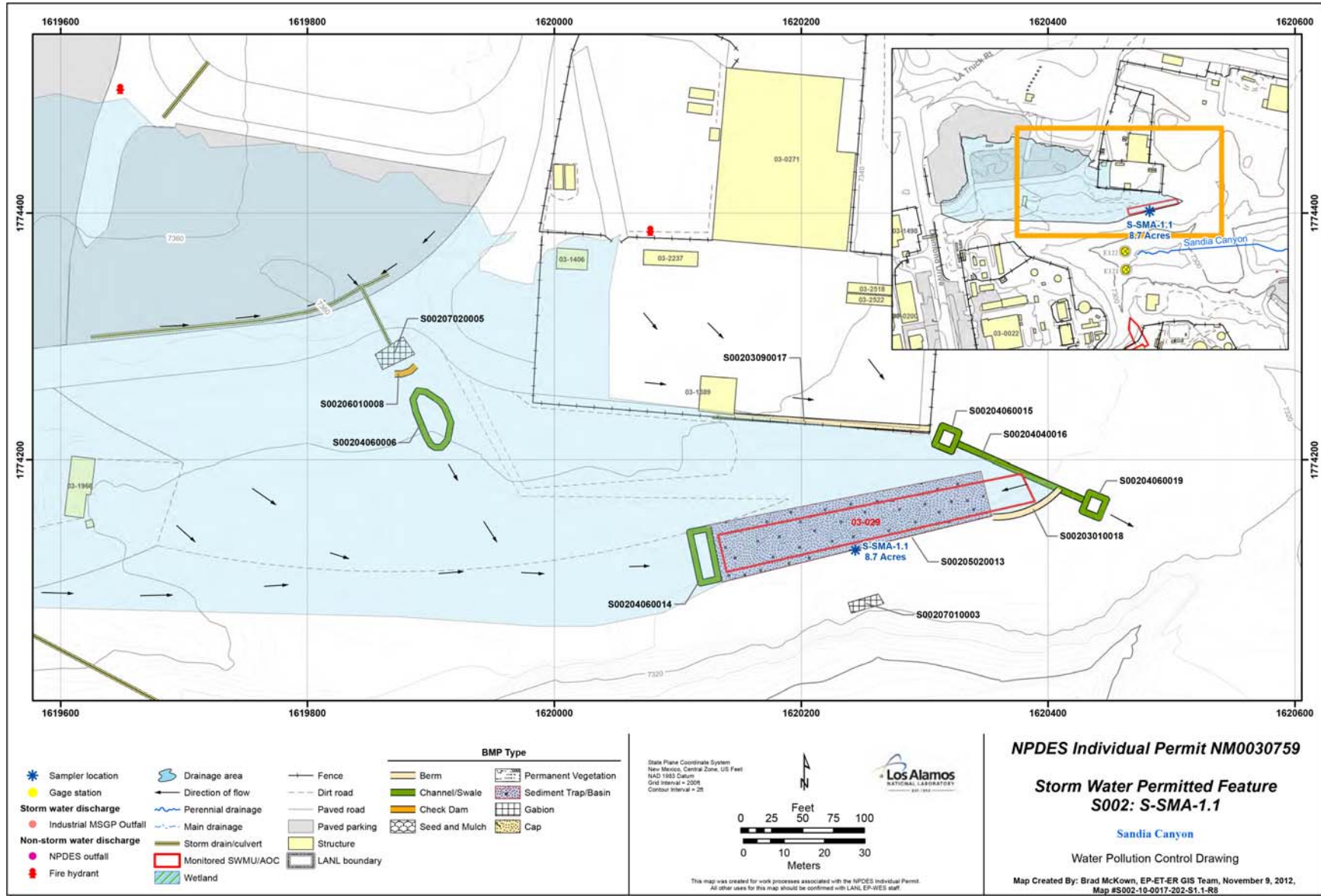
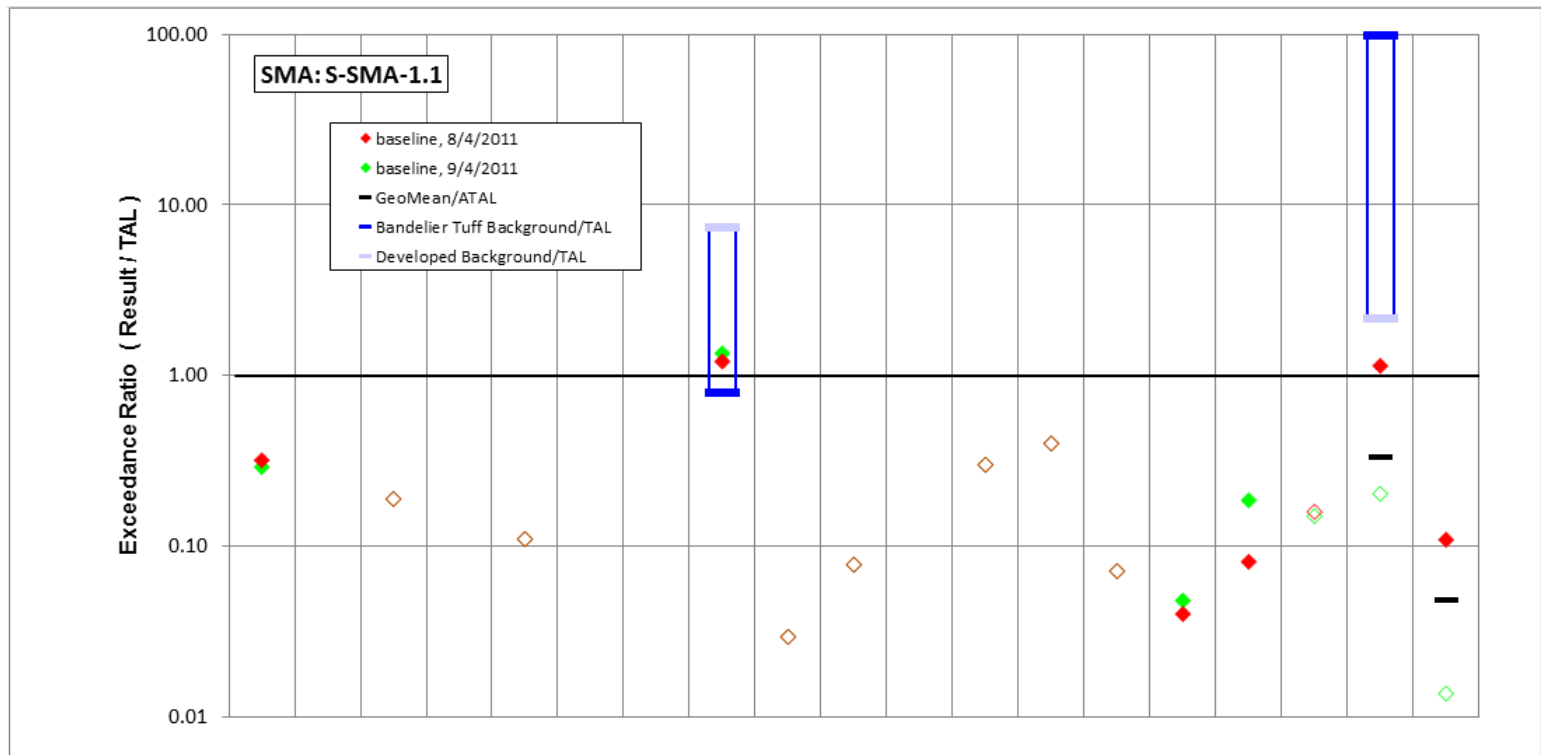


Figure 66-1 S-SMA-1.1 location map

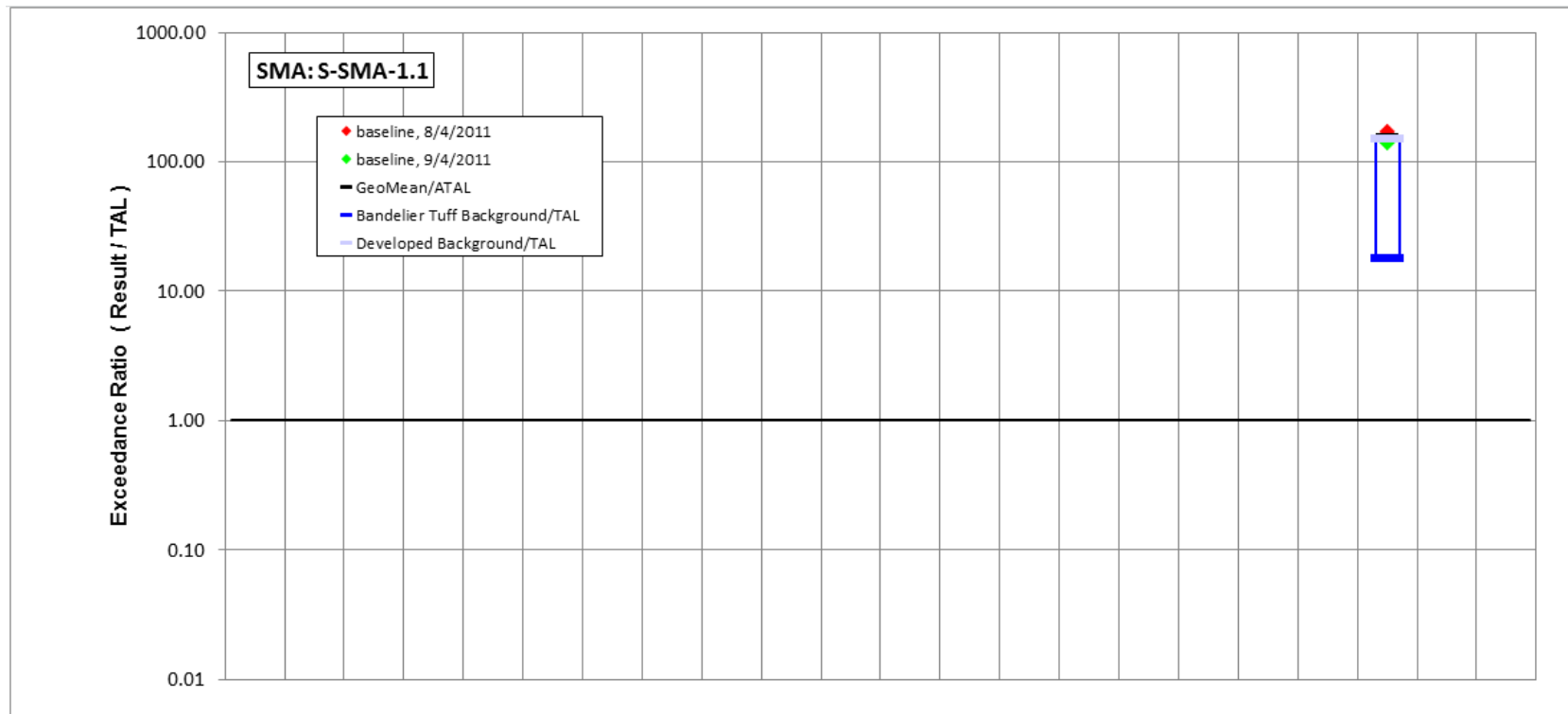


	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	<b>Copper</b>	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	<b>Gross alpha</b>	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
<b>9/4/2011 result</b>	218	1.1	1.7	15	0.11	2	2.4	<b>5.8</b>	0.5	0.06	0.84	1.5	0.2	0.45	4.8	7.8	0.002	3.04	0.41
result / TAL	0.29	0.0017	0.19	0.003	0.11	0.01	0.0024	<b>1.3</b>	0.029	0.078	0.0049	0.3	0.4	0.071	0.048	0.19	0.15	0.2	0.014
<b>8/4/2011 result</b>	239	1	1.7	18.8	0.11	2	1.9	5.2	0.5	0.06	1.1	1.5	0.2	0.45	4	3.4	0.002	<b>17.1</b>	3.27
result / TAL	0.32	0.002	0.19	0.0038	0.11	0.01	0.0019	1.2	0.029	0.078	0.0065	0.3	0.4	0.071	0.04	0.081	0.16	<b>1.1</b>	0.11

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

**Figure 66-2 Inorganic analytical results summary plot for S-SMA-1.1**





	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	Total PCB	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	-	-
std value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6E-04	-	-
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
<b>9/4/2011 result</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>0.09</b>	-	-
<b>result / TAL</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>140</b>	-	-
<b>8/4/2011 result</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>0.11</b>	-	-
<b>result / TAL</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>170</b>	-	-

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 66-3 Organic analytical results summary plot for S-SMA-1.1

**67.0 S-SMA-2: SWMUs 03-012(b), 03-045(b), 03-045(c), and 03-056(c)**

**67.1 Site Descriptions**

Four historical industrial activity areas are associated with S003, S-SMA-2: Sites 03-012(b), 03-045(b), 03-045(c), and 03-056(c).

SWMU 03-012(b) is soil contamination associated with operational releases from the TA-03 power plant, building 03-22, and associated cooling towers, including cooling tower drift. In 2007, a gas turbine generator, along with supporting utilities, was installed east of the power plant within the eastern portion of SWMU 03-012(b). Potential contaminants associated with industrial materials historically managed at this Site are chromium and PCBs.

SWMU 03-045(b) is the NPDES-permitted outfall (001) that receives treated sanitary effluent from the TA-46 Sanitary Wastewater Systems Consolidation (SWSC) plant, wastewater from makeup water production and boiler blowdown water from the cogeneration plant, and occasional releases of cooling tower blowdown and other discharges from the TA-03 power plant, building 03-0022. All wastewater discharged from the TA-03 power plant to SWMU 03-045(b) is treated in a neutralization tank (structure 03-1381); the function of the tank is to adjust the pH of wastewater before discharge to meet NPDES requirements. Sulfuric acid and soda ash were used to adjust the pH of wastewater before discharge to the SWMU 03-045(b) outfall. The NPDES permit number for the outfall was previously identified as



S-SMA-2, Permanent Vegetation Grasses and Shrubs, S00302010007 (photo ID 7600-3)

EPA 01A001 but is currently permitted as 001 on the NPDES authorization permit. The outfall is currently authorized to discharge power plant wastewater from cooling towers, boiler blowdown drains, demineralizer backwash, floor and sink drains, and treated sanitary reuse to Sandia Canyon. The outfall discharges onto sand and gravel southeast of building 03-0022 and into a small tributary of Sandia Canyon. Discharge from another permitted outfall (13S) at the TA-46 SWSC plant is pumped to the holding tank 03-0336 [SWMU 03-014(q)] for potential reuse and

eventually discharges to SWMU 03-045(b). The outfall received effluent from two power plant cooling towers (structures 03-0025 and 03-0058) and the chlorine building (structure 03-0024). A sulfuric acid release to the SWMU 03-045(b) outfall from the power plant neutralization tank, structure 03-1381, occurred in May 1990. Low pH values were reported in a 2.5-mi section of the watercourse below the outfall. Soda ash was added along the watercourse to raise the pH. A subsequent survey detected no measurements below pH 6.9. Cooling tower (structure 03-0025) was demolished in 1990, and a new cooling tower (structure 03-0592) was constructed at the same location in 1998; the concrete foundation of structure 03-0025 collected storm water that discharged to the outfall. Cooling tower structure 03-592 is currently in operation and continues to discharge to SWMU 03 045(b). Cooling tower structure 03-58 is scheduled to be decommissioned and demolished in fiscal year (FY) 2012 or FY3013. This site is an NPDES-permitted outfall that discharges wastewater from ongoing industrial sources, not storm water runoff from a SWMU. Potential contaminants associated with industrial materials historically managed at this Site are various organic chemicals, metals, and radionuclides present at low concentrations in the NPDES-permitted discharge.

SWMU 03-045(c) is an NPDES-permitted outfall (EPA 03A027) located approximately 55 ft east of SWMU 03-045(b). SWMU 03-045(c) previously received effluent from a cooling tower (structure 03-0285) that served the generators powering a Los Alamos National Laboratory (Laboratory) computer system. Cooling tower 03-0285 was taken out of service several years ago, and SWMU 03-045(c) now receives blowdown from the cooling towers at the Strategic Computing Complex (building 03-2327), which became operational in 2002. SWMU 03-045(c) may have historically received chromate-treated water. Outfall 03A027 is currently permitted for the discharge of cooling tower blowdown water and other wastewater from structures 03-0285 and 03-2327. This site is an NPDES-permitted outfall that discharges wastewater from ongoing industrial sources not storm water runoff from a SWMU. Potential contaminants associated with industrial materials historically managed at this Site are naturally occurring inorganic chemicals concentrated in cooling tower blowdown and conditioning chemicals added to the cooling water discharged at this site under the NPDES permit.

SWMU 03-056(c) is a former outdoor storage area located at TA-03 on the north side of a utilities shop, building 03-0223. The SWMU extends along the length of building 03-0223 to the south and is bounded by a security fence to the north. The outdoor storage area was used to store electrical equipment, capacitors, and transformers with PCB-containing dielectric fluids. Waste solvents used for cleaning electrical equipment were also stored at this location. The types of solvents used at the site from 1967 to approximately 1981 are not known. Viking R30 (1,1,1-trichloroethane) was used from 1981 to 1990. Beginning in 1990 and continuing to 1992, a nonhazardous citrus-based solvent was used as a substitute for solvent-based cleaners. In addition, Transclene, which contains tetrachloroethylene, may have been stored at the site because it was used by an electrical equipment maintenance subcontractor to retrofill transformers in the field. It is believed the maintenance crew disposed of all these waste materials at an approved waste disposal facility. In 1991, the site's facility manager placed approximately 1–2 ft of clean fill on the area occupying the former storage area to elevate it and to reroute run-on drainage away from this site. In 1992, the storage area was decommissioned. In February 2011, NMED issued a certificate of completion (COC) with controls for SWMU 03-056(c). Potential contaminants associated with industrial materials historically managed at this Site are PCBs and organic solvents.

The project map (Figure 67-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

## **67.2 Control Measures**

There are many potential run-on sources at this SMA, including culverts, paved roads, and parking lots, drainage from the roofs of the numerous buildings, and two NPDES outfalls from the power plant. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 67-1).

**Table 67-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
S00302010007	Established Vegetation - Grasses and Shrubs			X		CB
S00303020008	Berms - Base Course	X			X	CB
S00304060005	Channel/Swale - Riprap	X		X		CB
S00304060009	Channel/Swale - Riprap	X		X		CB
S00304060010	Channel/Swale - Riprap	X		X		CB
S00304060011	Channel/Swale - Riprap	X		X		B
S00307020006	Gabions - Gabion Blanket		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

Enhanced control measures will be installed in the second quarter of 2013 as part of corrective action.

### 67.3 Storm Water Monitoring

SWMUs 03-012(b), 03-045(b), 03-045(c), and 03-056(c) are monitored within S-SMA-2. Following the installation of baseline control measures, a baseline storm water sample was collected on July 28, 2001, and August 13, 2011 (Figures 67-2 and 67-3). Analytical results from this sample yielded four TAL exceedances:

- Copper concentrations of 5.8 and 8.3 µg/L (MTAL is 4.3 µg/L),
- Zinc concentration of 62.6 µg/L (MTAL is 42 µg/L),
- Gross-alpha activity of 29 pCi/L (ATAL is 15 pCi/L), and
- PCB concentrations of 140 and 190 ng/L (ATAL is 0.6 ng/L).

These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

*SWMU 03-012(b)*: Potential contaminants associated with industrial materials historically managed at this Site are chromium and PCBs.

- Copper—Copper was not detected above BV in soil samples collected during the 2009 Consent Order investigation but was detected a maximum concentration 1.8 times BV in Site characterization soil samples collected in 2002.
- Zinc—Zinc was detected at a maximum concentration 3.0 times BV in Consent Order soil samples and in Site characterization samples collected in 2002 and 2004.
- PCBs—PCBs were detected at a maximum concentration 1.4 times residential SSL in Consent Order soil samples and Site characterization samples collected in 2004.

In summary, copper and zinc are not known to be associated with industrial materials historically managed at the Site and were detected only slightly above BVs. Based on site history and previous sampling results, the Site is an unlikely source of copper and zinc above MTALs in storm water. PCBs may have been associated with industrial materials historically managed at the Site and were detected above residential SSLs. Based on site history and previous sampling results, the Site may be a source of PCBs above ATAL in storm water.

*SWMU 03-045(b)*: This Site is an NPDES-permitted outfall that discharges wastewater from ongoing industrial sources not storm water runoff from a SWMU. Potential contaminants associated with industrial materials historically managed at this Site are various organic chemicals, metals, and radionuclides present at low concentrations in the NPDES-permitted discharge.

- Copper—Copper was not detected above BV in soil samples collected during the 2009 Consent Order investigation.
- Zinc—Zinc was detected at a maximum concentration 1.1 times BV in Consent Order soil samples.
- PCBs—PCBs were detected at a maximum concentration 5% of the residential SSL in Consent Order soil samples.

In summary, copper, zinc, and PCBs are not known to be associated with industrial materials historically managed at the Site. Copper was not detected above BV, zinc was detected only slightly above BV, and PCBs were detected at low concentrations well below residential SSLs. Based on site history and previous sampling results, the Site is an unlikely source of copper and zinc above MTALs and PCBs above ATAL in storm water. In addition, this Site is an active outfall that discharges under an NPDES permit.

*SWMU 03-045(c)*: This Site is an NPDES-permitted outfall that discharges wastewater from ongoing industrial sources not storm water runoff from a SWMU. Potential contaminants associated with industrial materials historically managed at this Site are naturally occurring inorganic chemicals concentrated in cooling tower blowdown and conditioning chemicals added to the cooling water discharged at this Site under the NPDES permit.

- Copper—Copper was not detected above BV in soil samples collected during the 2009 Consent Order investigation.
- Zinc—Zinc was detected at a maximum concentration 1.03 times BV in Consent Order soil samples.
- PCBs—PCBs were detected at a maximum concentration 1.4 times residential SSL in Consent Order soil samples.

In summary, copper, zinc, and PCBs are not known to be associated with industrial materials historically managed at the Site. Copper was not detected above BV, and zinc was detected only slightly above BV. PCBs were detected above residential SSLs, but these samples were also associated with SWMU 03-012(b), which is a more likely source of PCBs. Based on site history and previous sampling results, the Site is an unlikely source of copper and zinc above MTALs and PCBs above ATAL in storm water. In addition, this Site is an active outfall that discharges under an NPDES permit.



*SWMU 03-056(c)*: Potential contaminants associated with industrial materials historically managed at this Site are PCBs and organic solvents.

- Consent Order sampling has not been performed at SWMU 03-056(c). Samples were collected during a 2000–2001 voluntary corrective action (VCA) conducted to remove PCB contamination.
- Copper—Copper was detected at a maximum concentration 1.02 times BVs in 2000–2001 VCA confirmation samples.
- Zinc—Zinc was detected at a maximum concentration 1.6 times BVs in 2000–2001 VCA confirmation samples.
- PCBs—VCA confirmation samples documented the 95% upper confidence limit for PCBs was less than the EPA cleanup level of 1 mg/kg (which is less than residential SSLs).

In summary, copper and zinc are not known to be associated with industrial materials historically managed at the Site and were detected only slightly above BVs. Based on site history and previous sampling results, the Site is an unlikely source of copper and zinc above MTALs in storm water. PCBs are known to be associated with industrial materials historically managed at the Site, but the Site was remediated to EPA PCB cleanup levels, which are less than residential SSLs. Based on site history and previous sampling results, the Site may be a source of PCBs above ATAL in storm water.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figures 67-2 and 67-3. UTLs developed for urban settings were derived from runoff from developed landscapes on the Pajarito Plateau, including buildings, parking lots, roads, and associated features, and are labeled “Developed Background” in Figures 67-2 and 67-3.

Monitoring location S-SMA-2 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as from landscape consisting of Bandelier Tuff sediment. Metals including copper and zinc are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals. PCBs are associated with building materials including paint, caulking, asphalt, solvents, transformers, and cutting oils.

- Copper—The copper UTL from developed urban landscape storm water run-on is 32.3 µg/L; the copper UTL for storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L. The copper results from 2011 are between these two values.
- Zinc—The zinc UTL from developed urban landscape storm water run-on is 1120 µg/L; the zinc UTL for storm water containing sediments derived from Bandelier Tuff is 109 µg/L. The zinc result from 2011 is less than both of these values.
- Gross alpha—The gross-alpha UTL from developed urban landscape storm water run-on is 32.5 pCi/L; the gross-alpha UTL for storm water containing sediments derived from Bandelier Tuff is 1490 pCi/L. The 2011 gross-alpha result is less than both of these values.
- PCB—The PCB UTL from developed urban landscape storm water run-on is 98 ng/L; the PCB UTL for storm water containing sediments derived from Bandelier Tuff is 11.7 ng/L. The PCB results from 2011 are greater than both of these values.

All the analytical results for these samples are reported in the 2011 Annual Report.

#### 67.4 Inspections and Maintenance

RG121.9 recorded two storm events at S-SMA-2 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 67-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-22637	05-08-2012
Storm Rain Event	BMP-25249	07-24-2012
Storm Rain Event	BMP-28706	10-23-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 67-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-23538	Installed riprap S00304060011 as outlet protection at outlet west of existing riprap -0009.	05-29-2012	21 day(s)	Maintenance conducted as soon as practicable.
BMP-25864	Reshaped and built up base course berm S00303020008.	07-31-2012	7 day(s)	Maintenance conducted in timely manner.
BMP-25865	Added rock to riprap S00304060009.	08-08-2012	15 day(s)	Maintenance conducted as soon as practicable.
BMP-29158	Riprap S00304060009 extended south to span entire width of channel.	11-06-2012	14 day(s)	Maintenance conducted in timely manner.

#### 67.5 Compliance Status

The Sites associated with S-SMA-2 are high priority Sites. Corrective action is to be certified complete within 3 yr of the effective date of the IP (i.e., November 2015).

**Table 67-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 03-012(b)	Corrective Action Initiated	Corrective Action Initiated	Initiated 10-20-2011
SWMU 03-045(b)	Corrective Action Initiated	Corrective Action Initiated	Initiated 10-20-2011
SWMU 03-045(c)	Corrective Action Initiated	Corrective Action Initiated	Initiated 10-20-2011
SWMU 03-056(c)	Corrective Action Initiated	Corrective Action Complete	NMED, February 18, 2011, "Certificates of Completion Upper Sandia Canyon Aggregate Area, Los Alamos National Laboratory"

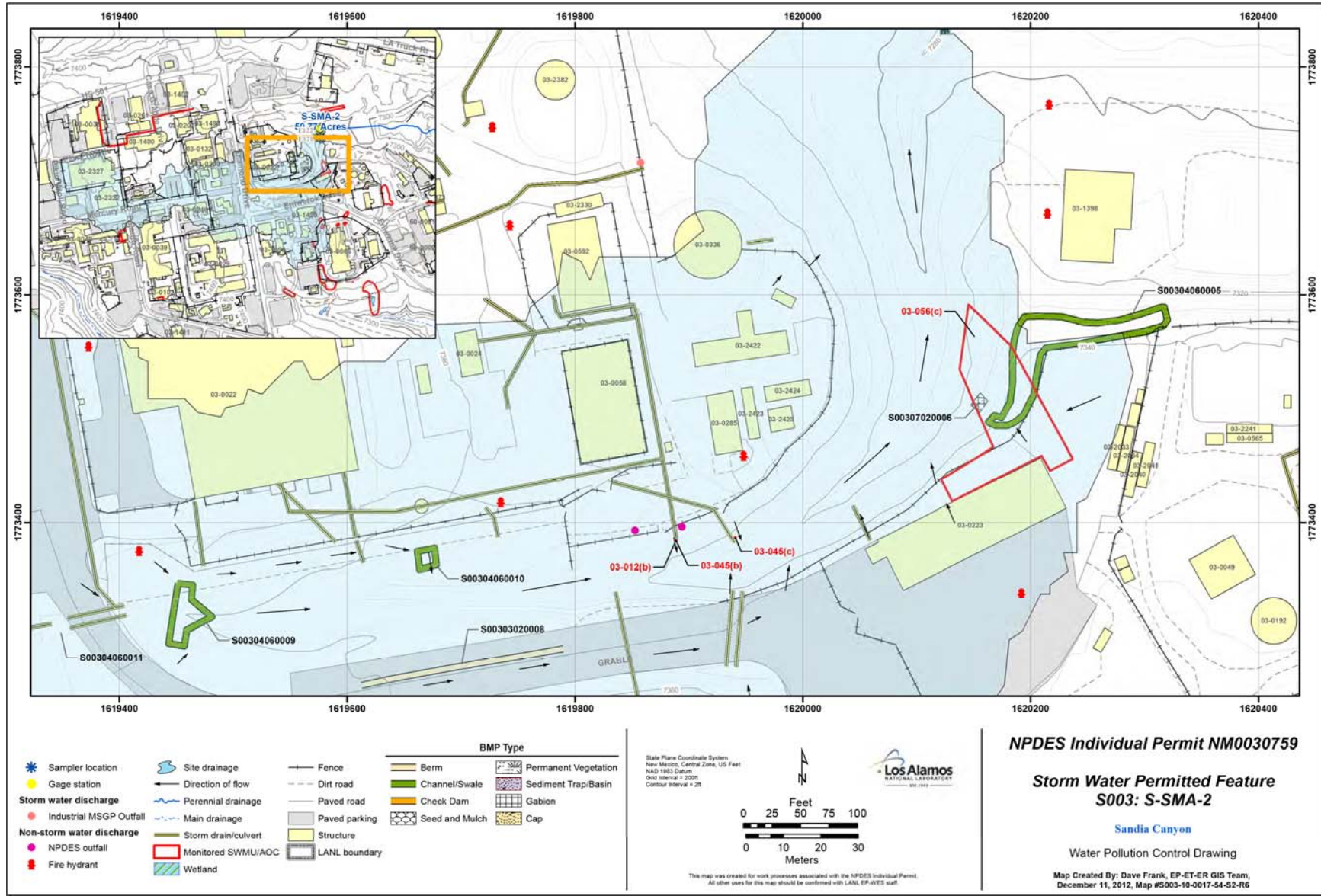
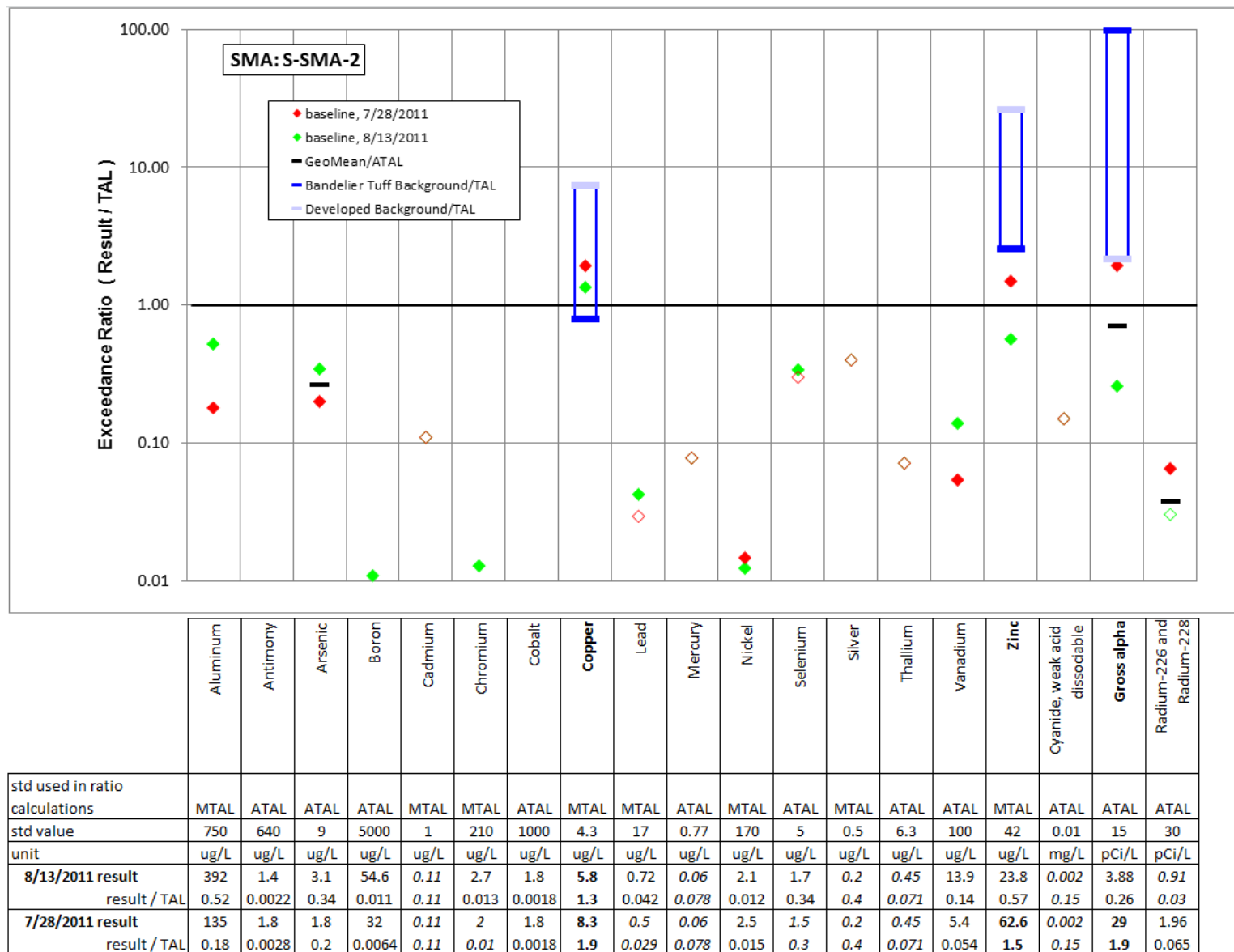
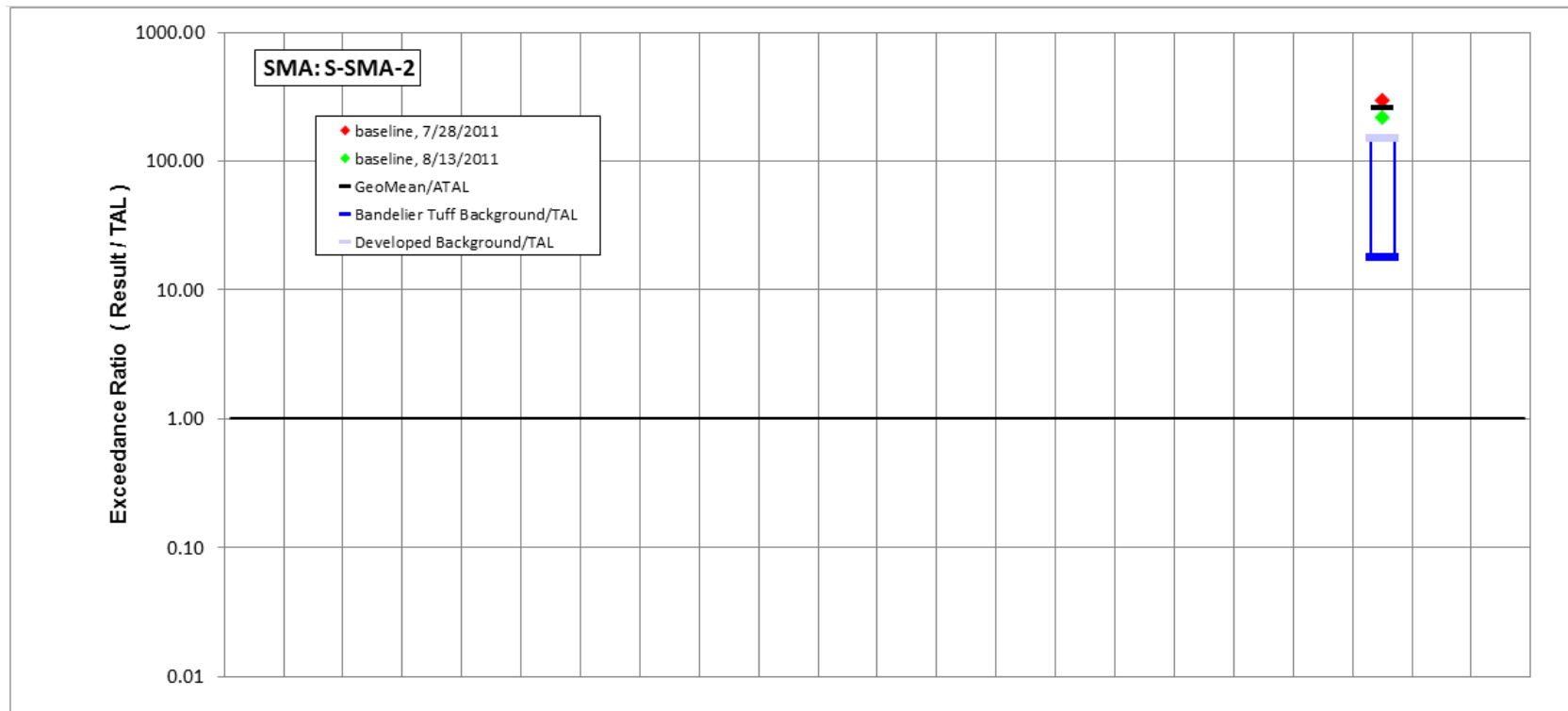


Figure 67-1 S-SMA-2 location map



Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 67-2 Inorganic analytical results summary plot for S-SMA-2



	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	Total PCB	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	-	-
std value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6E-04	-	-
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
<b>8/13/2011 result</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>0.14</b>	-	-
<b>result / TAL</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>220</b>	-	-
<b>7/28/2011 result</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>0.19</b>	-	-
<b>result / TAL</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>300</b>	-	-

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 67-3 Organic analytical results summary plot for S-SMA-2



**68.0 S-SMA-2.01: AOC 03-052(b)**

**68.1 Site Descriptions**

One historical industrial activity area is associated with S003A, S-SMA-2.01: Site 03-052(b).

AOC 03-052(b) consists of five storm water collection areas at TA-03 about 20 ft north and west of the Sigma Building (03-66). Surface runoff flows from the area around the north end of the Sigma Building to three storm water–collection areas within the building fence, which channel storm water to two collection areas north of the building 03-66 fence: the area to the northeast of building 03-66 discharges to a storm drain outlet just north of Eniwetok Drive and the area to the northwest of building 03-66 flows to a single storm drain that discharges to a low-lying grassy area northwest of building 03-66. Potential contaminants associated with industrial materials historically managed at this site would likely be those associated with upstream sites that are the source of the storm water runoff received at AOC 03-052(b). Upstream sites include AOC 03-056(k), a container storage area at the northwest corner of the Sigma Building. Waste oil, solvents, and radioactively contaminated graphite were staged in this area, and four documented releases of radiological materials occurred at this area.

The project map (Figure 68-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

**68.2 Control Measures**

The run-on at this SMA is captured by two culvert inlets within the two eastern vegetative buffer strips. These inlets capture roof and pavement drainage and discharge to the culvert outlet at the fence line and onto a riprap. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 68-1).

Enhanced controls were installed and certified on December 13, 2012, as part of corrective action. Photographs of the enhanced controls are available at <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/construction-certifications.php>.

**Table 68-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
S003A02030005	Established Vegetation - Vegetative Buffer Strip	X		X		CB
S003A03010004	Berms - Earthen	X			X	CB
S003A04060003	Channel/Swale - Riprap		X	X		CB
S003A05020006	Sediment Traps and Basins - Sediment Basin		X		X	EC
S003A05020007	Sediment Traps and Basins - Sediment Basin		X		X	EC
S003A05020008	Sediment Traps and Basins - Sediment Basin		X		X	EC

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

### 68.3 Storm Water Monitoring

AOC 03-052(b) is monitored within S-SMA-2.01. Following the installation of baseline control measures, a baseline storm water sample was collected on August 5, 2011, and September 7, 2011 (Figures 68-2 and 68-3). Analytical results from this sample yielded two TAL exceedances:

- Copper concentrations of 10.7 and 10.9 µg/L (MTAL is 4.3 µg/L), and
- PCB concentrations of 380 and 1900 ng/L (ATAL is 0.6 ng/L).

These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

*AOC 03-052(b)*: Potential contaminants associated with industrial materials historically managed at this Site would likely be those associated with upstream Sites that are the source of the storm water runoff received at AOC 03-052(b). Upstream Sites include AOC 03-056(k), a container storage area at the northwest corner of the Sigma Building. Waste oil, solvents, and radioactively contaminated graphite were staged in this area, and four documented releases of radiological materials occurred at this area.

- Copper—Copper was detected at a maximum concentration 1.6 times BV in soil samples collected during the 2009 Consent Order investigation.
- PCBs—PCBs were detected a maximum concentration 51% of the residential SSL in Consent Order soil samples.

In summary, copper and PCBs are not known to be associated with industrial materials historically managed at the Site. Copper was detected only slightly above BV and PCBs were detected at low concentrations below residential SSLs. Based on site history and previous sampling results, the Site is an unlikely source of copper above MTAL and PCBs above ATAL in storm water.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figures 68-2 and 68-3. UTLs developed for urban settings were derived from runoff from developed landscapes on the Pajarito Plateau, including buildings, parking lots, roads, and associated features, and are labeled “Developed Background” in Figures 68-2 and 68-3.



S-SMA-2.01, Sediment Basin, S003A05020006, 007, 008 (photo ID 27766-5)

Monitoring location S-SMA-2.01 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as from landscape consisting of Bandelier Tuff sediment. Metals including copper are associated with building materials, parking lots, and automobiles as well as

low concentrations in the Bandelier Tuff. PCBs are associated with building materials including paint, caulking, asphalt, solvents, transformers, and cutting oils.

- Copper—The copper UTL from developed urban landscape storm water run-on is 32.3 µg/L; the copper UTL for storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L. The copper results from 2011 are between these two values.
- PCB—The PCB UTL from developed urban landscape storm water run-on is 98 ng/L; the PCB UTL for storm water containing sediments derived from Bandelier Tuff is 11.7 ng/L. The PCB results from 2011 are greater than both of these values.

All the analytical results for these samples are reported in the 2011 Annual Report.

#### 68.4 Inspections and Maintenance

RG121.9 recorded two storm events at S-SMA-2.01 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 68-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23447	06-04-2012
Storm Rain Event	BMP-25255	07-23-2012
Enhanced Control Measure Verification	BMP-27766	10-16-2012
Storm Rain Event	BMP-28712	10-23-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 68-3 Maintenance during 2012**

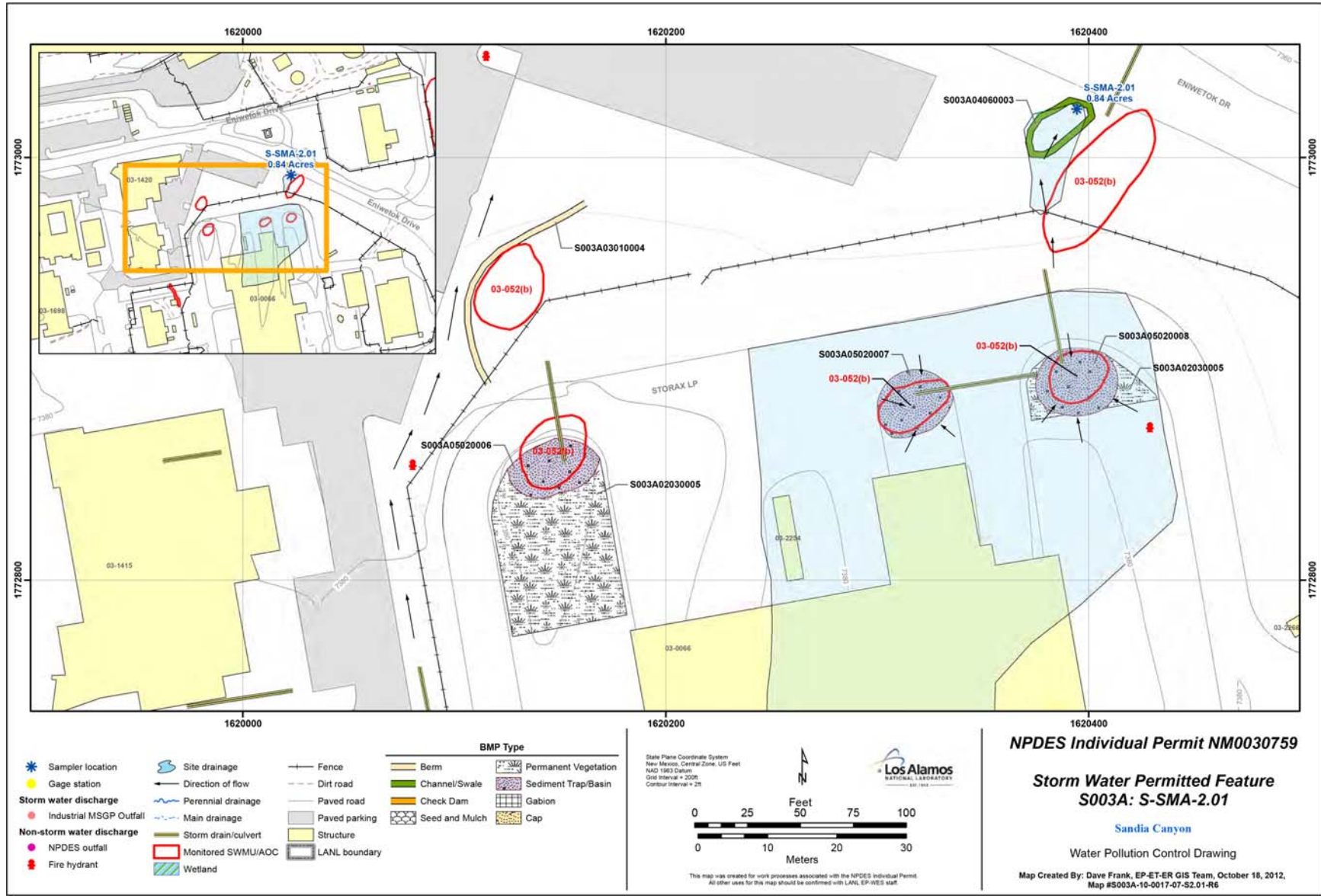
Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-23985	Built up low areas of earthen berm S003A03010004 with more soil.	06-13-2012	9 day(s)	Maintenance conducted in timely manner.

#### 68.5 Compliance Status

The Site associated with S-SMA-2.01 is a high priority Site. Corrective action is to be certified complete within 3 yr of the effective date of the IP (i.e., November 2015).

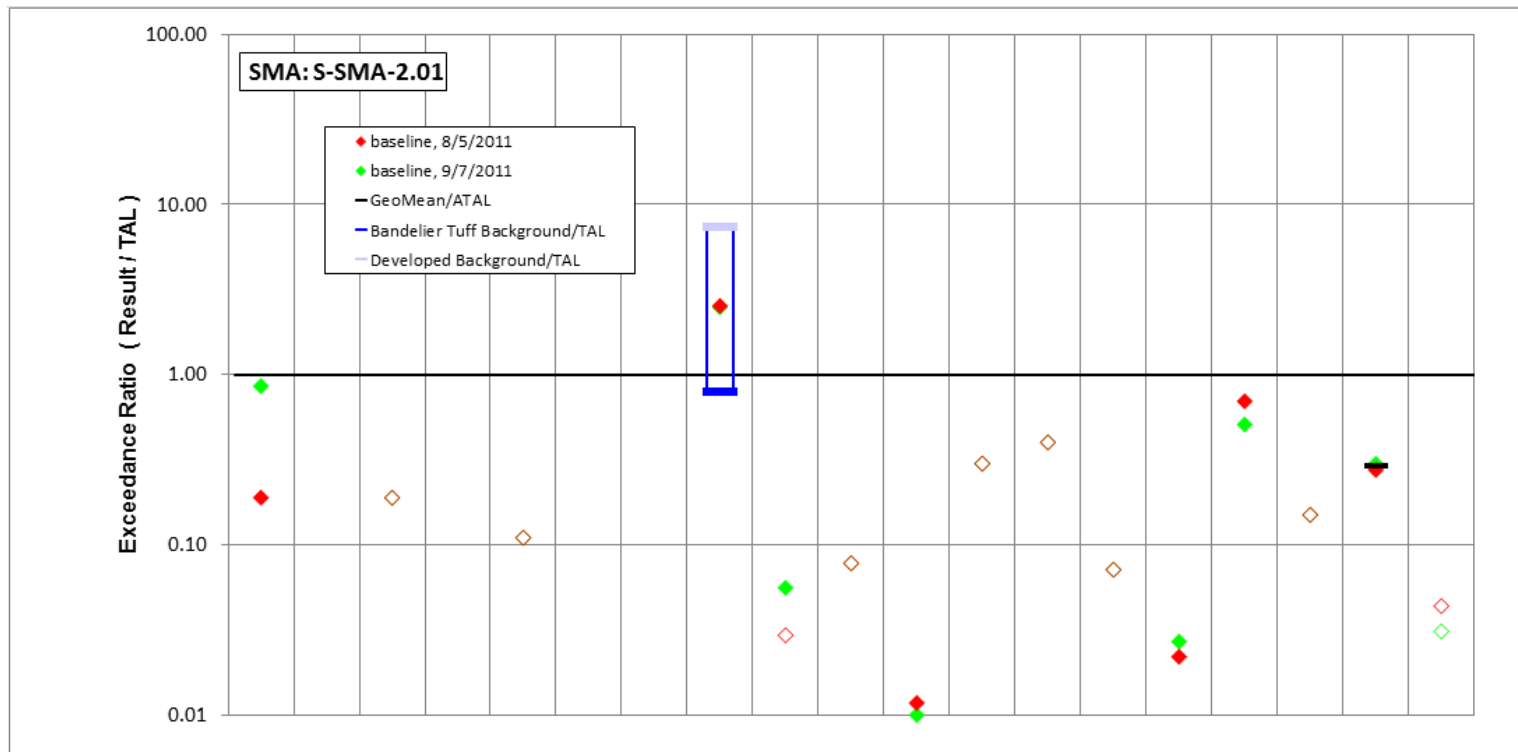
**Table 68-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
AOC 03-052(b)	Corrective Action Initiated	Enhanced Control Corrective Action Monitoring	Initiated 11-27-2012



**Figure 68-1 S-SMA-2.01 location map**



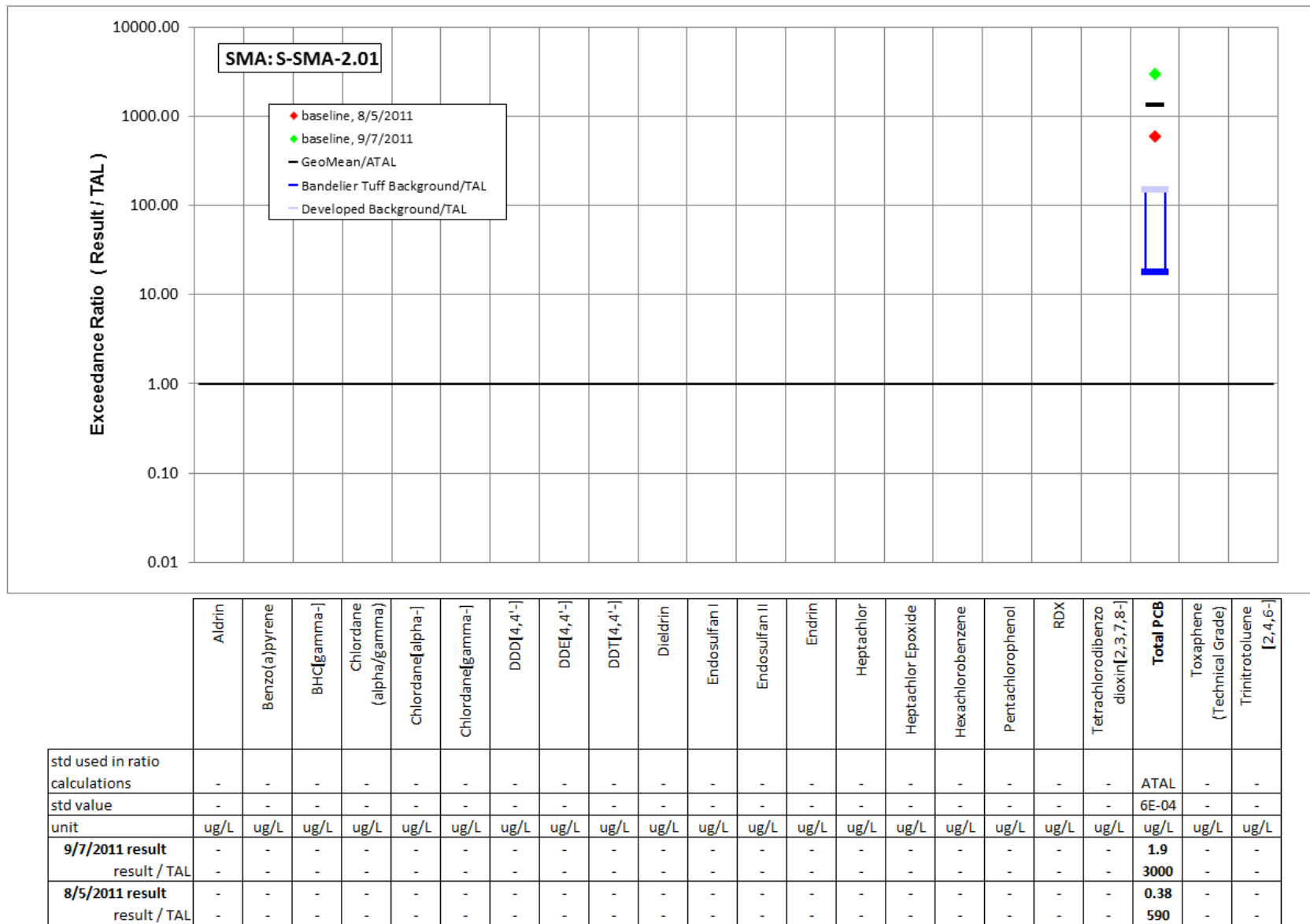


	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	<b>Copper</b>	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	Gross alpha	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
<b>9/7/2011 result</b>	642	2	1.7	15	<i>0.11</i>	2	2.3	<b>10.7</b>	0.95	<i>0.06</i>	1.7	1.5	0.2	0.45	2.7	21.4	<i>0.002</i>	4.48	0.93
result / TAL	0.86	0.0031	0.19	0.003	0.11	0.01	0.0023	2.5	0.056	0.078	0.01	0.3	0.4	0.071	0.027	0.51	0.15	0.3	0.031
<b>8/5/2011 result</b>	142	3.7	1.7	16.6	0.11	2	1	<b>10.9</b>	0.5	0.06	2	1.5	0.2	0.45	2.2	29.3	<i>0.002</i>	4.13	1.31
result / TAL	0.19	0.0058	0.19	0.0033	0.11	0.01	0.001	2.5	0.029	0.078	0.012	0.3	0.4	0.071	0.022	0.7	0.15	0.28	0.044

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

**Figure 68-2 Inorganic analytical results summary plot for S-SMA-2.01**





Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 68-3 Organic analytical results summary plot for S-SMA-2.01

**69.0 S-SMA-2.8: AOC 03-014(c2)**

**69.1 Site Descriptions**

One historical industrial activity area is associated with S004, S-SMA-2.8: Site 03-014(c2).

AOC 03-014(c2) is the inactive overflow outfall that previously received treated effluent from the former TA-03 wastewater treatment plant (WWTP) from 1975 to 1985, when the WWTP chlorination system [SWMU 03-014(j)] was constructed. The outfall was located on the north side of the chlorination system pump pit (structure 03-0166). Effluent for this outfall discharged as sheet flow onto a steep slope containing an erosion channel from storm water runoff. The channel eventually trends northeast into Sandia Canyon. Soil and sediment were occasionally cleaned out of the channel with a backhoe and piled onto the upslope channel bank. Following the construction of the chlorination system, the outfall was rerouted underground from the pump pit to the chlorination dosing and contact chamber where the final effluent discharged freely into Sandia Canyon from a flow measurement weir north of the contact chamber. This outfall was abandoned in 1988 or 1989, when the WWTP effluent was routed to a new outfall, AOC 03-014(b2). An evaluation of the former WWTP blueprints during the 1994 RFI identified the location of the original treated effluent outfall approximately 20 to 30 ft west of the original AOC 03-014(c2) outfall.

The project map (Figure 69-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

A recent review of SWMU/AOC boundaries in the PRS Database determined that the Site boundary for AOC 03-014(c2) is inaccurate. LANS has submitted a letter to NMED requesting approval of proposed boundary updates. The accurate, proposed boundary is shown with a dotted line on the project map (Figure 69-1). Upon NMED approval, the proposed dotted boundary line on the project map will be replaced with a solid line and updated on the Project Maps page of the IP website. This change will also be incorporated into the next SDPPP update.

**69.2 Control Measures**

There is no evidence of culvert discharge from the culvert located below the fence on the steep hillside next to the abandoned outfall. There is no evidence of significant run-on from the bare sand area south of the fence where the former WWTP is located. The northern access road contributes some run-on to the northern most SWMU boundary located below, or north of, the pit. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 69-1).

**Table 69-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
S00402010001	Established Vegetation - Grasses and Shrubs			X		CB
S00403010005	Berms - Earthen		X		X	CB
S00403020004	Berms - Base Course	X			X	CB
S00403060006	Berms - Straw Wattles		X		X	B
S00408040007	Cap - Metal	X		X		B

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

### 69.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at S-SMA-2.8. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 69.4 Inspections and Maintenance

RG121.9 recorded two storm events at S-SMA-2.8 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 69-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-22638	05-09-2012
Storm Rain Event	BMP-25250	07-25-2012
Storm Rain Event	BMP-28707	10-23-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 69-3 Maintenance during 2012**

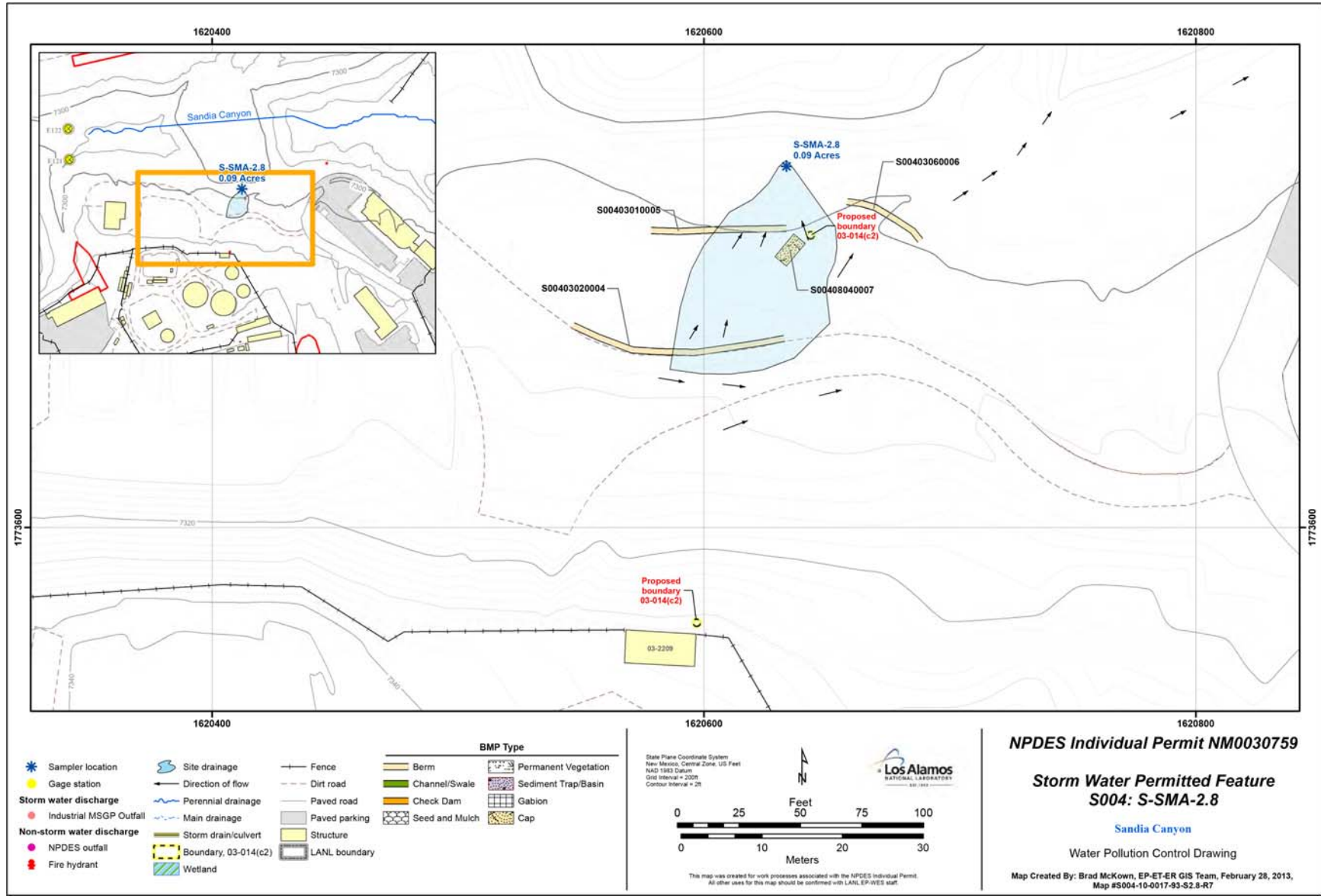
Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-23537	Installed new wattle S00403060006 at same location as S00403060002, which was retired.	05-23-2012	14 day(s)	Maintenance conducted in timely manner.
BMP-25250	Berm S00403020004 repaired with shovels.	07-25-2012	0 day(s)	Maintenance conducted upon inspection.

### 69.5 Compliance Status

The Site associated with S-SMA-2.8 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 69-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
AOC 03-014(c2)	Baseline Monitoring	Baseline Monitoring Extended	No Comment



**Figure 69-1 S-SMA-2.8 location map**

**70.0 S-SMA-3.51: SWMU 03-009(i)**

**70.1 Site Descriptions**

One historical industrial activity area is associated with S005, S-SMA-3.51: Site 03-009(i).

SWMU 03-009(i) is an inactive surface disposal site located east of the liquid and compressed-gas facility (building 03-0170). This site consists of construction debris, including crushed tuff, pieces of concrete, rock, and piles of fill. This surface disposal site ceased to be used in 1980.

The project map (Figure 70-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

**70.2 Control Measures**

Paved areas to the south of this SMA have the potential to contribute run-on. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 70-1).

**Table 70-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
S00502010003	Established Vegetation - Grasses and Shrubs			X		CB
S00503010005	Berms - Earthen		X		X	CB
S00503020006	Berms - Base Course	X			X	CB
S00506010007	Check Dam - Rock	X			X	CB
S00506010008	Check Dam - Rock	X			X	CB
S00506010009	Check Dam - Rock	X			X	CB
S00506010010	Check Dam - Rock	X			X	CB
S00506010012	Check Dam - Rock	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

**70.3 Storm Water Monitoring**

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at S-SMA-3.51. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

**70.4 Inspections and Maintenance**

RG121.9 recorded two storm events at S-SMA-3.51 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.



**Table 70-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23448	05-09-2012
Storm Rain Event	BMP-25252	07-23-2012
Storm Rain Event	BMP-28709	10-23-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 70-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-25785	Repaired erosion control blanket on berm S00503010005.	07-26-2012	3 day(s)	Maintenance conducted in timely manner.

**70.5 Compliance Status**

The Site associated with S-SMA-3.51 is a high priority Site. Corrective action is to be certified complete within 3 yr of the effective date of the IP (i.e., November 2015).

**Table 70-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 03-009(i)	Baseline Monitoring	Baseline Monitoring Extended	No Comment



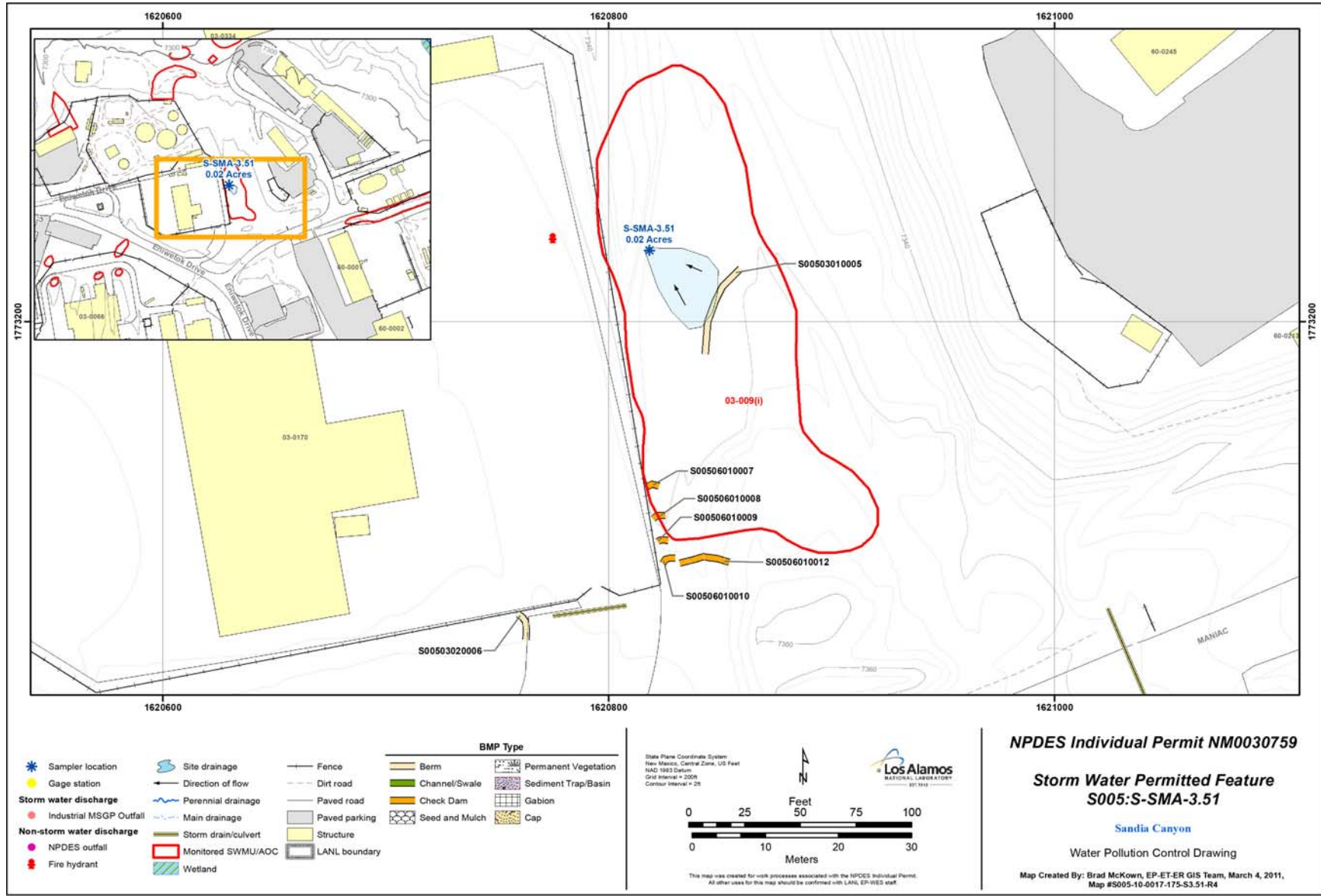


Figure 70-1 S-SMA-3.51 location map

**71.0 S-SMA-3.52: SWMU 03-021**

**71.1 Site Descriptions**

One historical industrial activity area is associated with S005A, S-SMA-3.52: Site 03-021.

SWMU 03-021 is an outfall and associated daylight channel located approximately 60 ft north of the north exterior wall of the liquid and compressed gas facility (building 03-0170). The outfall is a formerly NPDES-permitted outfall (EPA 04A094) and was removed from the 1997 permit. From 1964 to 1976, the outfall discharged caustic wash and rinse water from compressed-gas-cylinder cleaning operations. The cylinders were washed and stripped of paint using a caustic soda solution before they were repainted. The cylinders were screened for radioactive contamination and cleaned of any exterior oil, dirt, and grease before they were brought to building 03-0170. Washing and stripping were done in a below-floor-grade pit in the northern part of building 03-0170. A 2-in.-diameter iron outfall pipe in an open exterior ditch carried the caustic wash and rinse water from the pit. The end of the outfall pipe discharged into a northeast-trending surface ditch that continued about 180 ft to the main north-south drainage ditch. This outfall was not used after 1976, when the compressed gas suppliers assumed cylinder-washing and -painting responsibilities. The outfall was buried when 5 to 10 ft of fill material was placed over the former outfall area and graded during site-preparation activities for the construction of building 03-1650, the compressed-gas cylinder storage shed.

The project map (Figure 71-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

The Site boundary for SWMU 03-021 has been modified to match the boundary depicted in the administrative record for the Consent Order, which is the controlling authority for SWMU and AOC boundary definitions used in the IP. The Site boundary change was minor and did not affect the SMA boundary or sampler location. The updated boundary is shown on the project map (Figure 71-1), and the Site physical characteristic information listed in Attachment 4 has been updated.

**71.2 Control Measures**

This SMA has the potential of run-on from the paved areas to the south and west. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 71-1).

**Table 71-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
S005A02010001	Established Vegetation - Grasses and Shrubs			X		CB
S005A03010004	Berms - Earthen	X			X	B
S005A03060003	Berms - Straw Wattles		X		X	CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

**71.3 Storm Water Monitoring**

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at S-SMA-3.52. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

**71.4 Inspections and Maintenance**

RG121.9 recorded two storm events at S-SMA-3.52 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 71-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23449	05-09-2012
Storm Rain Event	BMP-25253	07-23-2012
Storm Rain Event	BMP-28710	10-23-2012

There were no maintenance activities conducted at S-SMA-3.52 in 2012.

**71.5 Compliance Status**

The Site associated with S-SMA-3.52 is a high priority Site. Corrective action is to be certified complete within 3 yr of the effective date of the IP (i.e., November 2015).

**Table 71-3 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 03-021	Baseline Monitoring	Baseline Monitoring Extended	No Comment



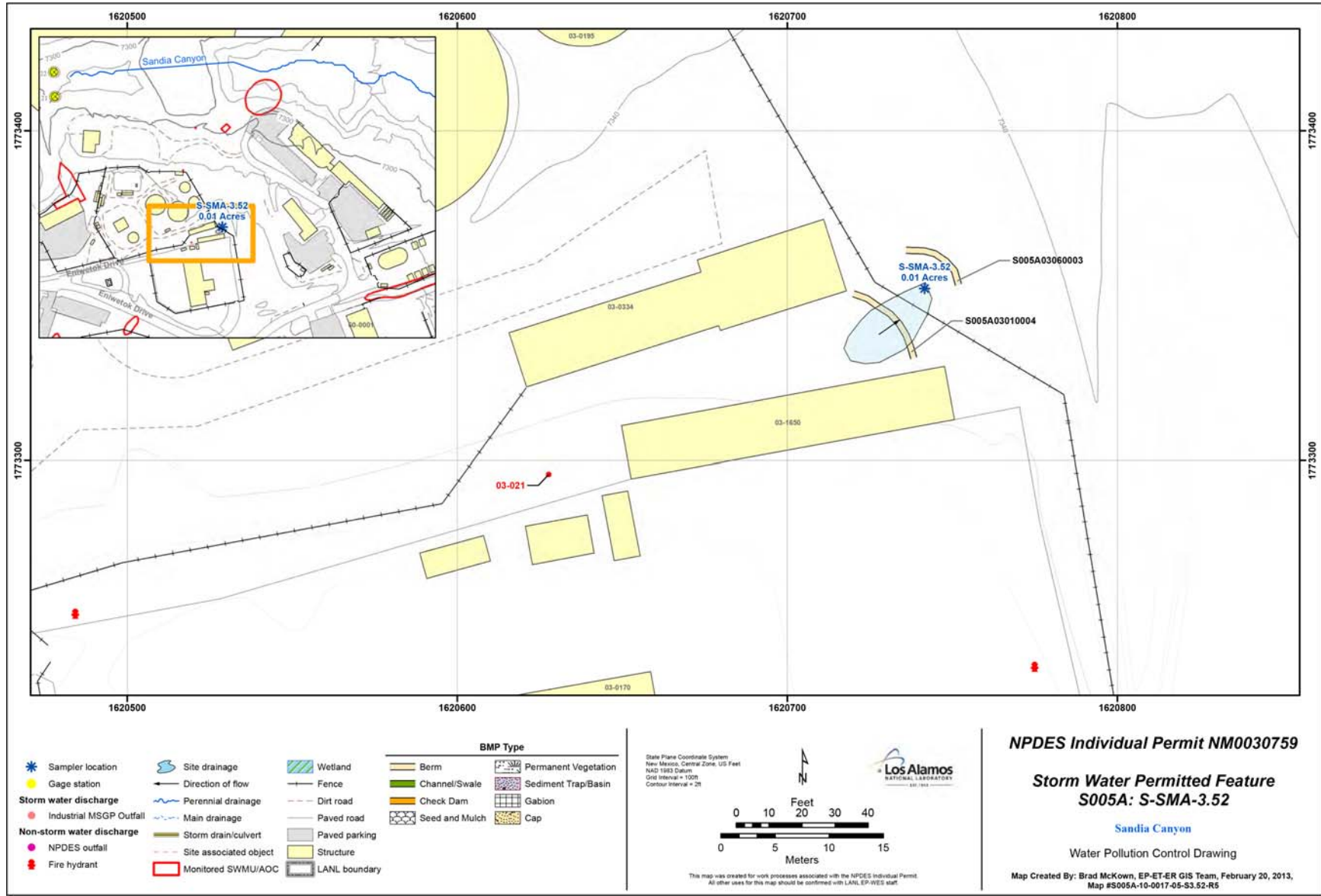


Figure 71-1 S-SMA-3.52 location map

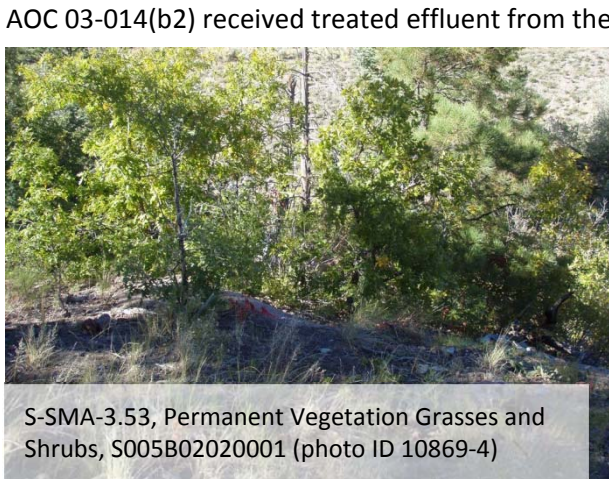


**72.0 S-SMA-3.53: AOC 03-014(b2)**

**72.1 Site Descriptions**

One historical industrial activity area is associated with S005B, S-SMA-3.53: Site 03-014(b2).

AOC 03-014(b2) is a former NPDES-permitted outfall (EPA SSS01S) for the former TA-03 WWTP. The outfall received treated effluent from a flow-measurement weir north of the WWTP chlorination system [SWMU 03-014(j)] dosing and contact chamber via a 1.5-ft-diameter x 300-ft-long CMP. The outfall discharged to a rocky outcrop at the edge of Sandia Canyon. Outfall SSS01S was permitted for the discharge of wastewater and was removed from the NPDES permit in 1994. AOC 03-014(b2) received effluent from the former TA-03 WWTP from 1989 to 1992 when the WWTP was decommissioned.



S-SMA-3.53, Permanent Vegetation Grasses and Shrubs, S005B02020001 (photo ID 10869-4)

AOC 03-014(b2) received treated effluent from the SWSC plant at TA-46 from 1992 to 1998 when the effluent was switched to the outfall at the power plant, building 03-0022. AOC 03-014(b2) was monitored three times per month for biochemical oxygen demand, total suspended solids, pH, fecal coliform, total chlorine, and radioactive constituents. From 1989 to 1993, radioactive constituents were reported over the detection limits. Potential contaminants associated with industrial materials historically managed at this Site are various organic chemicals, metals, and radionuclides present at low concentrations in the effluent from the former TA-03 WWTP.

The project map (Figure 72-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

A recent review of SWMU/AOC boundaries in the PRS Database determined that the Site boundary for AOC 03-014(b2) is inaccurate. LANS has submitted a letter to NMED requesting approval of proposed boundary updates. The accurate, proposed boundary is shown with a dotted line on the project map (Figure 72-1). This boundary was used for corrective action planning and sampler location. Upon NMED approval, the proposed dotted boundary line on the project map will be replaced with a solid line and updated on the Project Maps page of the IP website. This change will also be incorporated into the next SDPPP update.

**72.2 Control Measures**

This SMA has the potential of run-on from the paved areas to the south. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 72-1).

**Table 72-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
S005B02020001	Established Vegetation - Forested/Needle Cast			X		CB
S005B03120005	Berms - Rock		X		X	CB
S005B04040007	Channel/Swale - Culvert	X		X		EC
S005B04060006	Channel/Swale - Riprap	X		X		EC
S005B06010003	Check Dam - Rock	X			X	CB
S005B06010004	Check Dam - Rock	X			X	CB
S005B08030008	Cap - Asphalt		X	X		EC

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

Enhanced control measures will be installed in the second quarter of 2013 as part of corrective action.

### 72.3 Storm Water Monitoring

AOC 03-014(b2) is monitored within S-SMA-3.53. Following the installation of baseline control measures, a baseline storm water sample was collected on August 4, 2011 (Figures 72-2 and 72-3). Analytical results from this sample yielded four TAL exceedances:

- Aluminum concentration of 1490 µg/L (MTAL is 750 µg/L),
- Copper concentration of 9.6 µg/L (MTAL is 4.3 µg/L),
- Gross-alpha activity of 62.5 pCi/L (ATAL is 15 pCi/L), and
- PCB concentration of 700 ng/L (ATAL is 0.6 ng/L).

These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

*AOC 03-014(b2)*: Potential contaminants associated with industrial materials historically managed at this Site are various organic chemicals, metals, and radionuclides present at low concentrations in the effluent from the former TA-03 WWTP.

- Aluminum—Aluminum was not detected above BVs in soil samples collected during the 2009 Consent Order investigation.
- Copper—Copper was not detected above BVs in soil samples collected during the 2009 Consent Order investigation.
- PCBs—PCBs were detected at a maximum concentration 6% of the residential SSL in Consent Order soil samples.
- Gross alpha—Consent Order samples were analyzed for americium-241, plutonium isotopes, and uranium isotopes but these alpha-emitting radionuclides were not detected above BVs/FVs.

Aluminum, copper, PCBs, and alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at this Site. Aluminum, copper, and alpha-emitting radionuclides of americium, plutonium, and uranium were not detected above BVs/FVs. PCBs were detected at low concentrations well below residential SSLs. Based on site history and previous sampling results, the Site is an unlikely source of aluminum and copper above MTALs and PCBs and adjusted gross alpha above ATALs in storm water.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figures 72-2 and 72-3. UTLs developed for urban settings were derived from runoff from developed landscapes on the Pajarito Plateau, including buildings, parking lots, roads, and associated features, and are labeled “Developed Background” in Figures 72-2 and 72-3.

Monitoring location S-SMA-3.53 is located on Bandelier Tuff, and no run-on occurs from developed facilities (i.e., buildings, pavement, and parking lots); therefore, calculated storm water UTLs from locations consisting of Bandelier Tuff sediment were compared with aluminum, copper, and gross-alpha MTAL and ATAL exceedances. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals. Copper and aluminum are associated with minerals in the Bandelier Tuff as well.

- Aluminum—The aluminum UTL for storm water containing sediments derived from Bandelier Tuff is 2210 µg/L; the result from 2011 is less than this value.
- Copper—The copper UTL for storm water containing sediments derived from Bandelier Tuff is 3.43; the result from 2011 is greater than this value.
- Gross alpha—The gross-alpha UTL for storm water containing sediments derived from Bandelier Tuff is 1490 pCi/L; the result from 2011 is less than this value.
- PCB—The PCB UTL for storm water containing sediments derived from Bandelier Tuff is 11.7 ng/L. The PCB result from 2011 is greater than this value.

All the analytical results for these samples are reported in the 2011 Annual Report.

#### **72.4 Inspections and Maintenance**

RG121.9 recorded two storm events at S-SMA-3.53 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 72-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Visual	COMP-21628	03-26-2012
Annual Erosion Evaluation	COMP-23450	03-26-2012
Storm Rain Event	BMP-25254	07-24-2012
Storm Rain Event	BMP-28711	10-23-2012
Construction	COMP-29627	11-15-2012
Construction	COMP-29803	11-20-2012
Construction	COMP-29944	11-27-2012
Construction	COMP-30333	12-04-2012
Construction	COMP-30404	12-11-2012
Enhanced Control Measure Verification	BMP-30405	12-12-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 72-3 Maintenance during 2012**

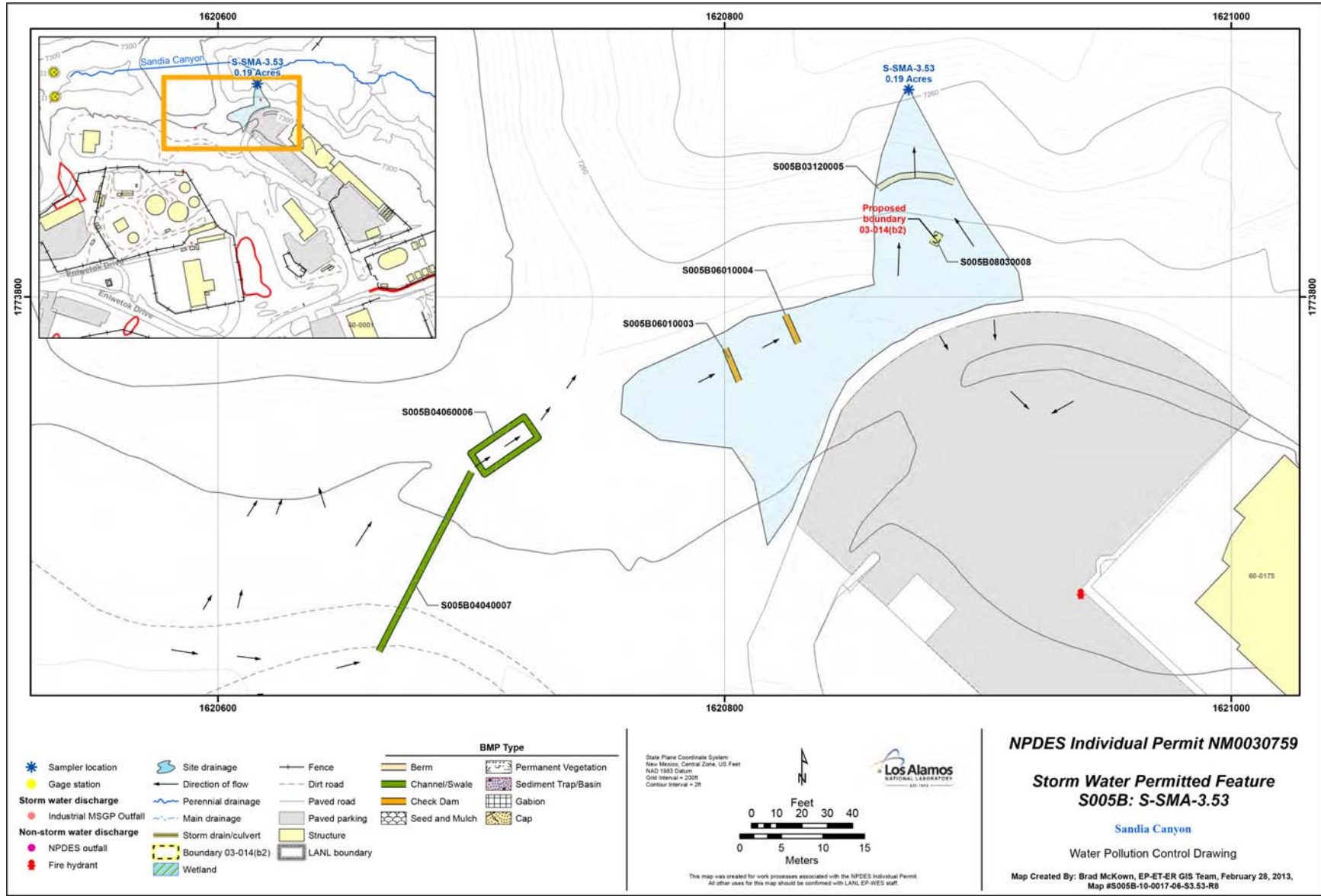
Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-22705	Picked up trash in SMA.	04-24-2012	193 day(s)	Maintenance conducted as soon as practicable.
BMP-22706	Added more rock to rock berm S005B03120005 to increase height.	04-26-2012	195 day(s)	Maintenance conducted as soon as practicable.

### 72.5 Compliance Status

The Site associated with S-SMA-3.53 is a high priority Site. Corrective action is to be certified complete within 3 yr of the effective date of the IP (i.e., November 2015).

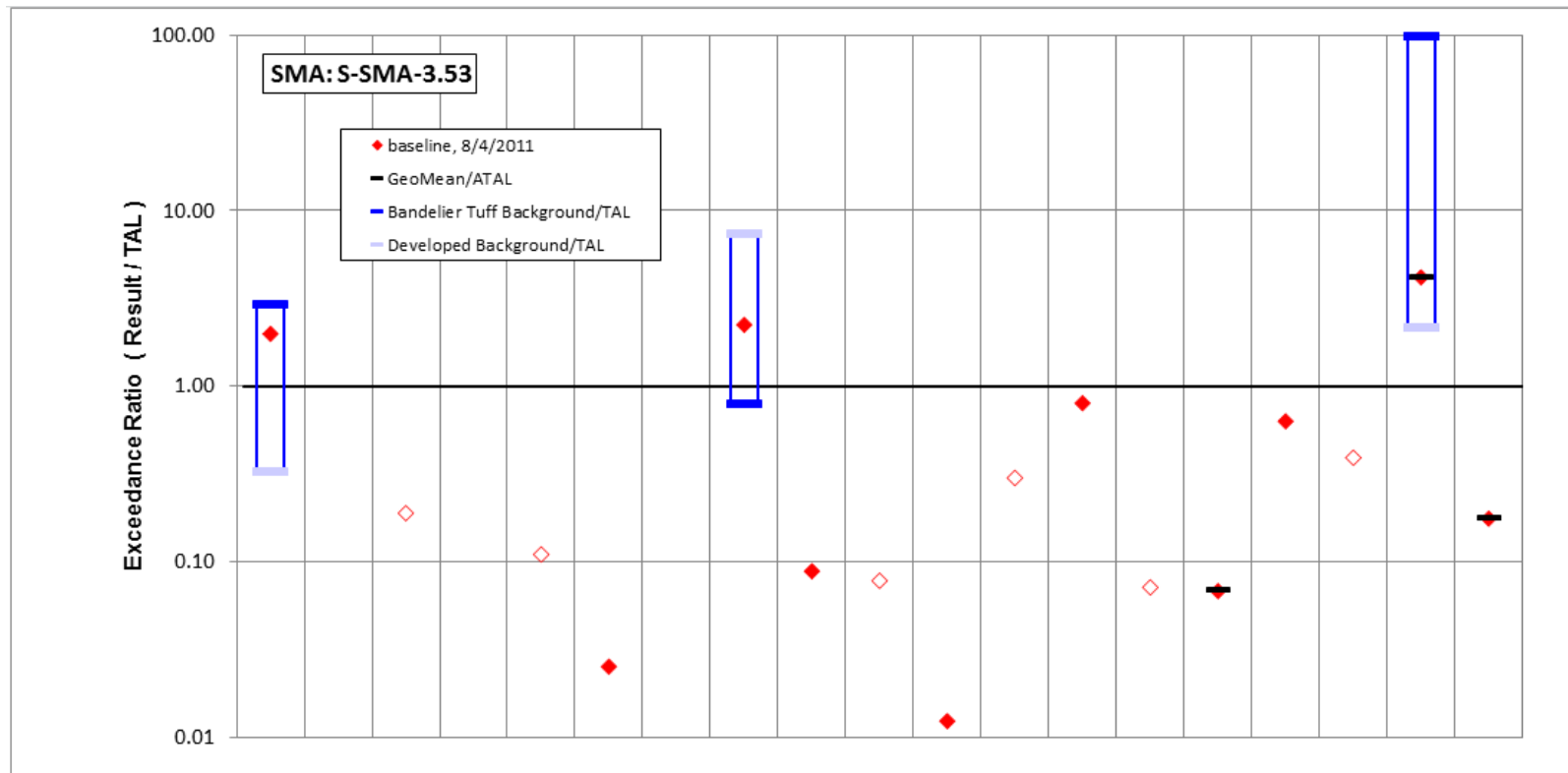
**Table 72-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
AOC 03-014(b2)	Baseline Monitoring	Corrective Action Initiated	Initiated 04-30-2012



**Figure 72-1 S-SMA-3.53 location map**

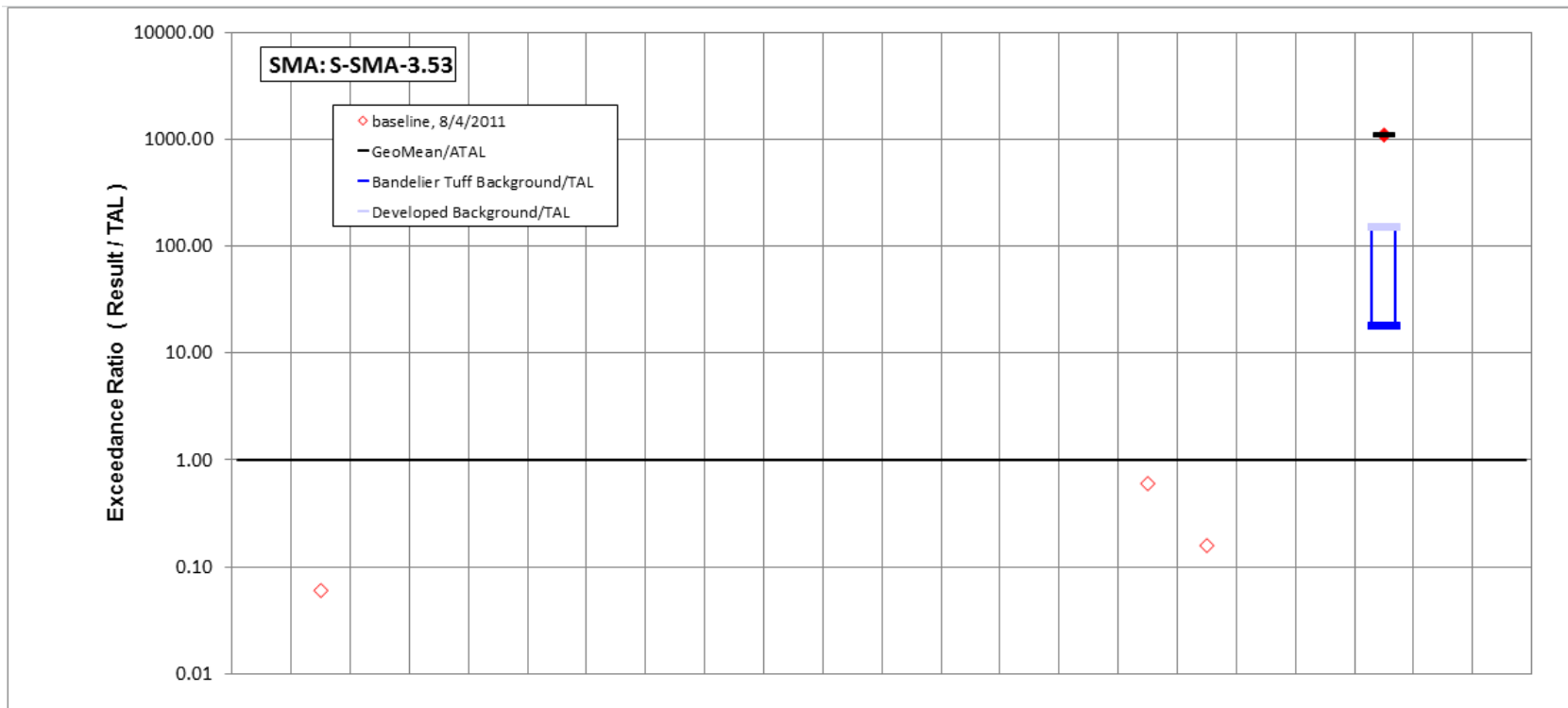




	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	Gross alpha	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
8/4/2011 result	<b>1490</b>	<i>1</i>	<i>1.7</i>	<i>23.2</i>	<i>0.11</i>	<i>5.3</i>	<i>4.1</i>	<b>9.6</b>	<i>1.5</i>	<i>0.06</i>	<i>2.1</i>	<i>1.5</i>	<i>0.4</i>	<i>0.45</i>	<i>6.8</i>	<i>26.5</i>	<i>0.004</i>	<b>62.5</b>	<i>5.28</i>
result / TAL	<b>2</b>	<i>0.002</i>	<i>0.19</i>	<i>0.0046</i>	<i>0.11</i>	<i>0.025</i>	<i>0.0041</i>	<b>2.2</b>	<i>0.088</i>	<i>0.078</i>	<i>0.012</i>	<i>0.3</i>	<i>0.8</i>	<i>0.071</i>	<i>0.068</i>	<i>0.63</i>	<i>0.39</i>	<b>4.2</b>	<i>0.18</i>

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 72-2 Inorganic analytical results summary plot for S-SMA-3.53



	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	<b>Total PCB</b>	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	ATAL	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	MTAL	-	-	ATAL	-	-
std value	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	5	19	-	-	6E-04	-	-
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
<b>8/4/2011 result</b>	-	<b>0.3</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>3</b>	<b>3</b>	-	-	<b>0.7</b>	-	-
<b>result / TAL</b>	-	<b>0.06</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>0.6</b>	<b>0.16</b>	-	-	<b>1100</b>	-	-

Bold font indicates result > TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 72-3 Organic analytical results summary plot for S-SMA-3.53

**73.0 S-SMA-3.6: SWMU 60-007(b)**

**73.1 Site Descriptions**

One historical industrial activity area is associated with S006, S-SMA-3.6: Site 60-007(b).

SWMU 60-007(b) is a storm drainage ditch at TA-60 that starts approximately 600 ft from a paved area directly north of the motor pool building (60-0001) and extends to the bottom of Sandia Canyon. Two parking lots located east of building 60-0001 drain to a ditch that eventually joins the SWMU 60-007(b) drainage ditch. Other former sources of potential contamination to the ditch are a steam-cleaning pad, a used-oil storage tank, and an oil/water separator. In addition, equipment that used PCB-containing oil was stored on an asphalt area east of building 60-0001. In 1986, the user group removed stained soil from the ditch. Potential contaminants associated with industrial materials historically managed at this Site are petroleum products and PCBs.

The project map (Figure 73-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

A recent review of SWMU/AOC boundaries in the PRS Database determined that the Site boundary for SWMU 60-007(b) is inaccurate. LANS has submitted a letter to NMED requesting approval of proposed boundary updates. The accurate, proposed boundary is shown with a dotted line on the project map (Figure 73-1). This boundary was used for corrective action planning and sampler location. Upon NMED approval, the proposed dotted boundary line on the project map will be replaced with a solid line and updated on the Project Maps page of the IP website. This change will also be incorporated into the next SDPPP update.

**73.2 Control Measures**

Run-on sources at this SMA include the dirt access road along the southern portion of the SWMU boundary; the asphalt parking area east of building 60-0002; the parking area and road between buildings 60-0001 and 60-0002 that discharges to a culvert and to the channel flowing onto the SWMU; the heavy equipment storage area east of 60-0001 that discharges to the on-site culvert; and the road and parking area between building 60-0001 and building 60-0085 that discharges to the on-site channel. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 73-1).



S-SMA-3.6, Earthen Berm, S00603010019 (photo ID 28140-2)

Enhanced controls were installed and certified on December 13, 2012, as part of corrective action. Photographs of the enhanced controls are available at <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/construction-certifications.php>.

**Table 73-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
S00602010004	Established Vegetation - Grasses and Shrubs			X		CB
S00603010019	Berms - Earthen	X			X	EC
S00603010020	Berms - Earthen	X			X	EC
S00604060002	Channel/Swale - Riprap	X		X		CB
S00604060010	Channel/Swale - Riprap		X	X		CB
S00604060011	Channel/Swale - Riprap	X		X		CB
S00606010001	Check Dam - Rock		X		X	CB
S00606010012	Check Dam - Rock		X		X	CB
S00606010013	Check Dam - Rock		X		X	CB
S00606010014	Check Dam - Rock		X		X	CB
S00606010015	Check Dam - Rock	X			X	CB
S00606010016	Check Dam - Rock	X			X	EC
S00606010017	Check Dam - Rock		X		X	EC
S00606010018	Check Dam - Rock		X		X	EC
S00607010007	Gabions - Gabions	X			X	CB
S00607010008	Gabions - Gabions	X			X	CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

### 73.3 Storm Water Monitoring

SWMU 60-007(b) is monitored within S-SMA-3.6. Following the installation of baseline control measures, a baseline storm water sample was collected on July 28, 2011, and August 13, 2011 (Figures 73-2 and 73-3). Analytical results from this sample yielded three TAL exceedances:

- Copper concentrations of 10.9 and 40.5 µg/L (MTAL is 4.3 µg/L),
- Zinc concentrations of 70.7 and 147 µg/L (MTAL is 42 µg/L), and
- PCB concentrations of 2 and 20 ng/L (ATAL is 0.6 ng/L).

These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

*SWMU 60-007(b)*: Potential contaminants associated with industrial materials historically managed at this Site are petroleum products and PCBs.

- Copper—Copper was detected at a maximum concentration 2.6 times BV in soil samples collected during the 2009 Consent Order investigation.
- Zinc—Zinc was detected at a maximum concentration 2.7 times BV in soil samples collected during the 2009 Consent Order investigation.
- PCBs—PCBs were detected at a maximum concentration 0.2% of the residential in Consent Order soil samples with SSL.

In summary, copper and zinc are not known to be associated with industrial materials historically managed at this Site and were detected only slightly above BVs. Based on site history and previous sampling results, the Site is an unlikely source of copper and zinc above MTALs in storm water. Although the site is associated with historical storage of equipment with PCB-containing oil, concentrations of PCBs in surface soil are very low, more than 2 orders of magnitude less than residential SSLs. Based on previous sampling results, the Site is an unlikely source of PCBs above ATAL in storm water.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figures 73-2 and 73-3.

UTLs developed for urban settings were derived from runoff from developed landscapes on the Pajarito Plateau, including buildings, parking lots, roads, and associated features, and are labeled “Developed Background” in Figures 73-2 and 73-3.

Monitoring location S-SMA-3.6 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as from landscape consisting of Bandelier Tuff sediment.

Metals including copper and zinc are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff. PCBs are associated with building materials including paint, caulking, asphalt, solvents, transformers, and cutting oils.



S-SMA-3.6, Rock Check Dam, S006060010014 (photo ID 7451-2)

- Copper—The copper UTL from developed urban landscape storm water run-on is 32.3 µg/L; the copper UTL for storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L. One copper result from 2011 is greater than both of these values the other result is between them.
- Zinc—The zinc UTL from developed urban landscape storm water run-on is 1120 µg/L; the zinc UTL for storm water containing sediments derived from Bandelier Tuff is 109 µg/L. One zinc result from 2011 is less than both of these values and the other result is between them.
- PCB—The PCB UTL from developed urban landscape storm water run-on is 98 ng/L; the PCB UTL for storm water containing sediments derived from Bandelier Tuff is 11.7 ng/L. One PCB result from 2011 is less than both of these values and the other result is between them.

All the analytical results for these samples are reported in the 2011 Annual Report.



**73.4 Inspections and Maintenance**

RG121.9 recorded two storm events at S-SMA-3.6 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 73-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Visual	COMP-20171	03-26-2012
Annual Erosion Evaluation	COMP-22639	05-09-2012
Storm Rain Event	BMP-25251	07-23-2012
Construction	COMP-28139	10-02-2012
Enhanced Control Measure Verification	BMP-28140	10-15-2012
Storm Rain Event	BMP-28708	10-19-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 73-3 Maintenance during 2012**

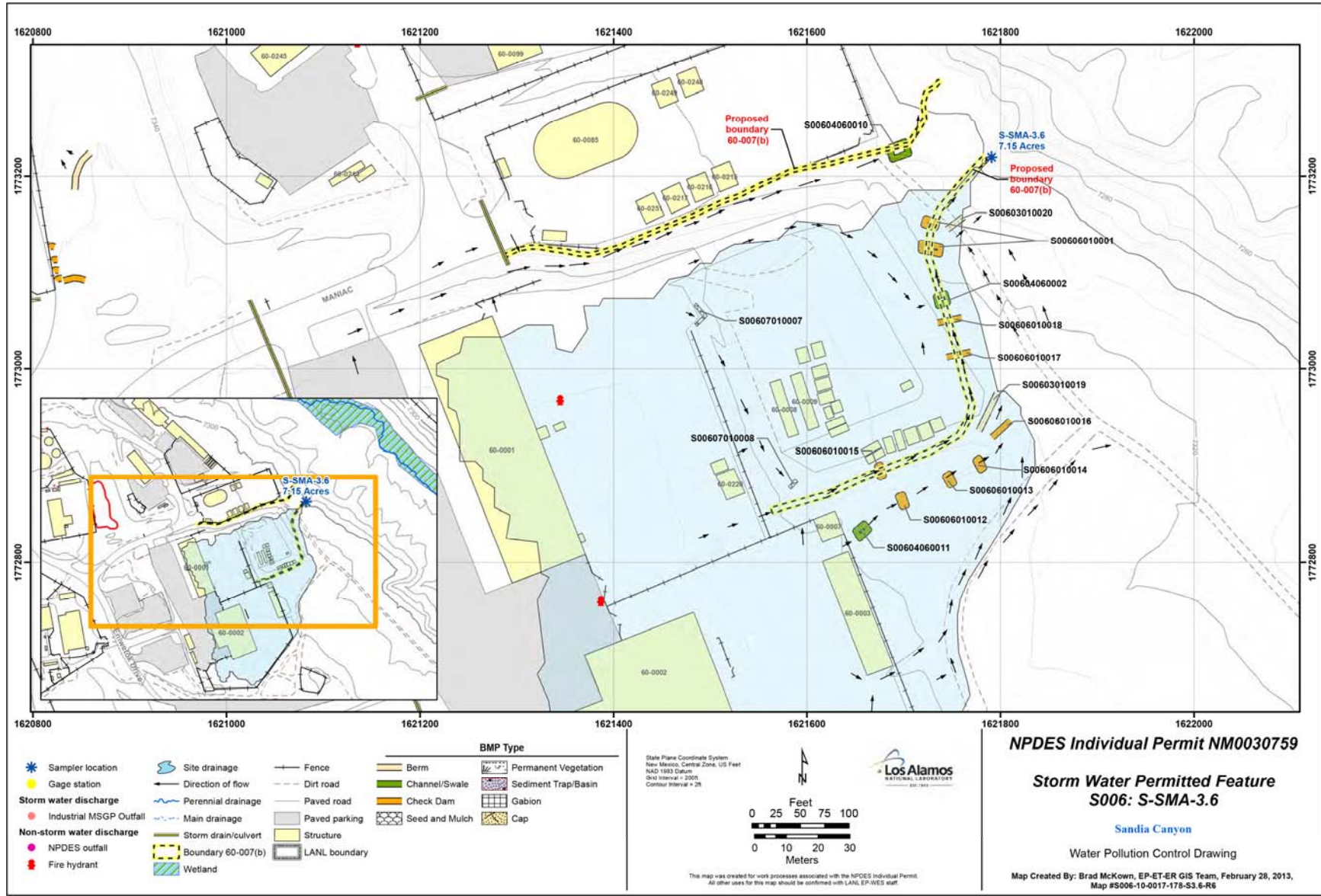
Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-25251	Picked up debris.	07-23-2012	0 day(s)	Maintenance conducted upon inspection.
BMP-25251	Rocks re-stacked up in center of rock check dam S00606010001.	07-23-2012	0 day(s)	Maintenance conducted upon inspection.

**73.5 Compliance Status**

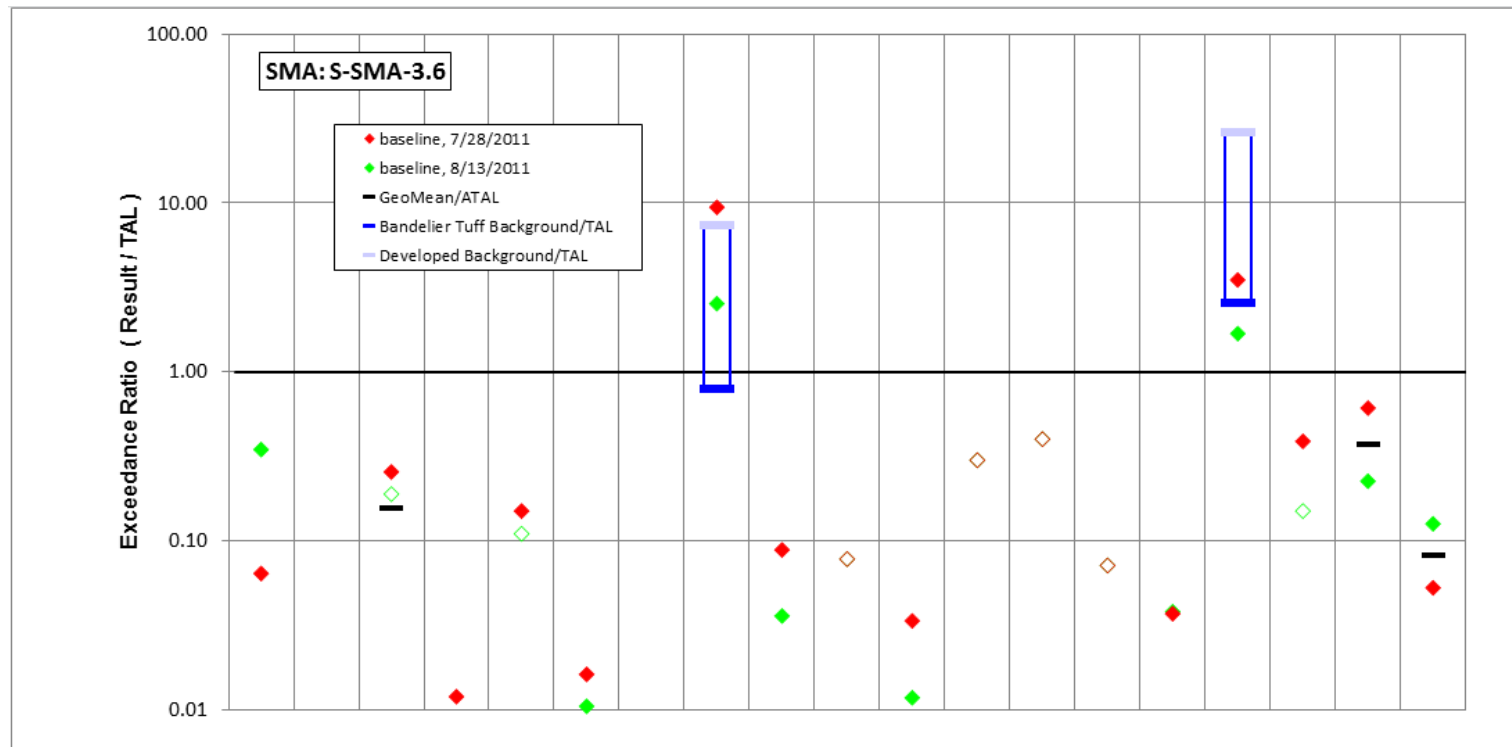
The Site associated with S-SMA-3.6 is a high priority Site. Corrective action is to be certified complete within 3 yr of the effective date of the IP (i.e., November 2015).

**Table 73-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 60-007(b)	Corrective Action Initiated	Enhanced Control Corrective Action Monitoring	Initiated 11-27-2012



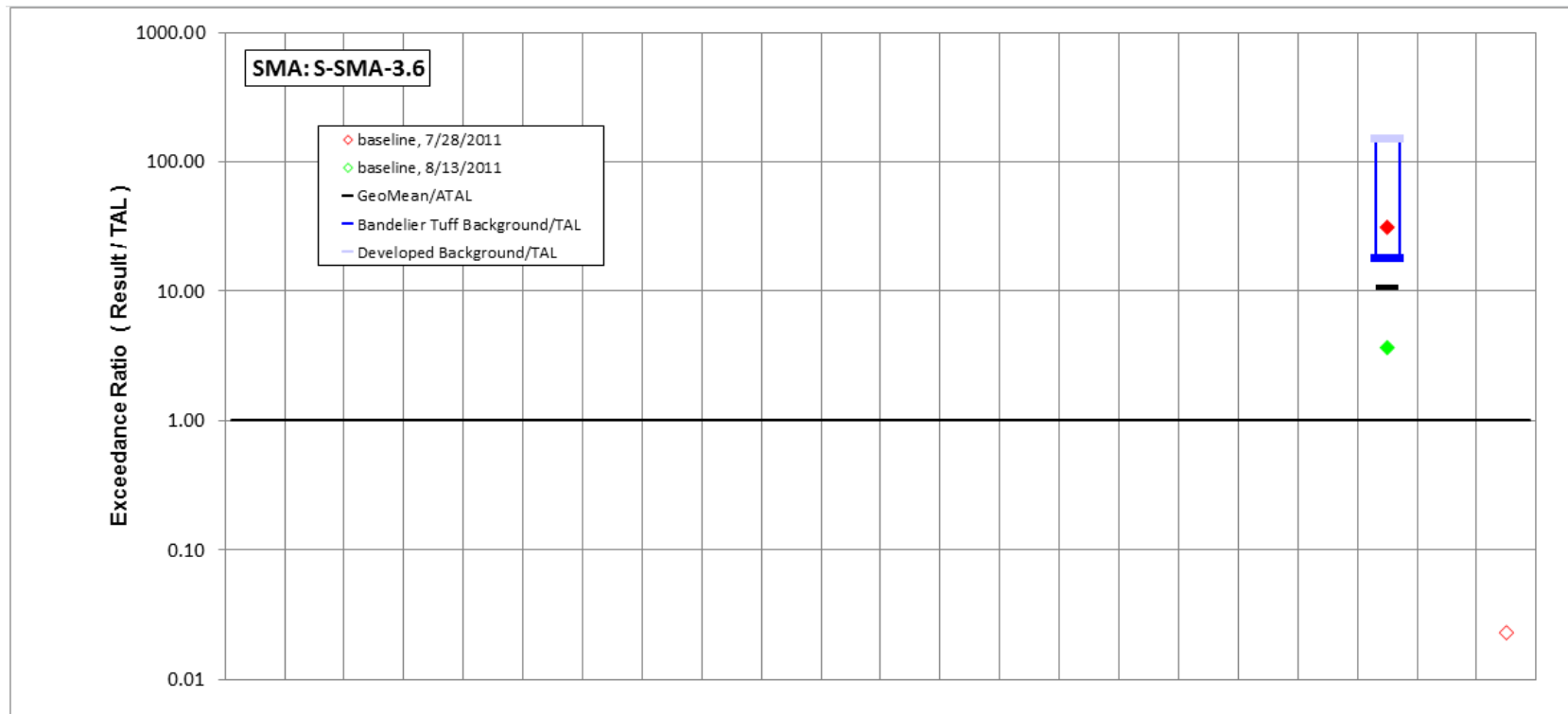
**Figure 73-1 S-SMA-3.6 location map**



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	<b>Copper</b>	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	<b>Zinc</b>	Cyanide, weak acid dissociable	Gross alpha	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
<b>8/13/2011 result</b>	260	1	1.7	28.5	0.11	2.2	1.1	<b>10.9</b>	0.61	0.06	2	1.5	0.2	0.45	3.8	<b>70.7</b>	0.002	3.38	3.78
result / TAL	0.35	0.002	0.19	0.0057	0.11	0.01	0.0011	2.5	0.036	0.078	0.012	0.3	0.4	0.071	0.038	<b>1.7</b>	0.15	0.23	0.13
<b>7/28/2011 result</b>	48	1.2	2.3	59.7	0.15	3.4	1.6	<b>40.5</b>	1.5	0.06	5.7	1.5	0.2	0.45	3.7	<b>147</b>	0.0039	9.16	1.58
result / TAL	0.064	0.0019	0.26	0.012	0.15	0.016	0.0016	<b>9.4</b>	0.088	0.078	0.034	0.3	0.4	0.071	0.037	<b>3.5</b>	0.39	0.61	0.053

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

**Figure 73-2 Inorganic analytical results summary plot for S-SMA-3.6**



	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	Total PCB	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	-	ATAL	-	ATAL
std value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200	-	6E-04	-	20
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
<b>8/13/2011 result</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<i>0.4</i>	-	<b>0.002</b>	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<i>0.002</i>	-	<b>3.7</b>	-	-
<b>7/28/2011 result</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<i>0.46</i>	-	<b>0.02</b>	-	<i>0.46</i>
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<i>0.002</i>	-	<b>31</b>	-	<i>0.023</i>

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 73-3 Organic analytical results summary plot for S-SMA-3.6

**74.0 S-SMA-3.7: AOC 53-012(e)**

**74.1 Site Descriptions**

One historical industrial activity area is associated with S007, S-SMA-3.7: Site 53-012(e).

AOC 53-012(e) is a drainline and former outfall associated with the TA-53 equipment test laboratory (building 53-2). The drainline runs southwest under an asphalt parking lot approximately 110 ft from the southwest corner of building 53-2 and then changes direction, running northwest approximately 100 ft to the associated outfall near the edge of Sandia Canyon. The drainline received discharges from 12 trench drains, 2 sink drains, and a floor drain in building 53-2. The primary source of wastewater was blowdown from the building 53-2 cooling tower, which was discharged to one of the trench drains. Historically, chemicals added to the cooling water included sodium molybdate and hydroxyethylidene diphosphonic acid as corrosion inhibitors; 1-bromo-3-chloro-5,5-dimethylhydantoin as a microbicide; and sodium bisulfite as an oxygen scavenger. The trench drains also received equipment-flushing and floor-washing wastewater. Discharges to this outfall began in approximately 1968 when building 53-2 went into service. This outfall was included in the NPDES permit as Outfall 03A114. Discharges to this outfall ceased, and the outfall was removed from the NPDES permit on July 11, 1995. The drainline is still in place, but the outfall has been plugged.

The project map (Figure 74-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

**74.2 Control Measures**

There is the potential for run-on at this SMA from the paved areas to the northeast. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 74-1).

**Table 74-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
S00702020002	Established Vegetation - Forested/Needle Cast			X		CB
S00703120004	Berms - Rock	X			X	CB
S00703120005	Berms - Rock		X		X	CB
S00704030003	Channel/Swale - Rock	X		X		CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

**74.3 Storm Water Monitoring**

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at S-SMA-3.7. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.



#### 74.4 Inspections and Maintenance

RG203 recorded four storm events at S-SMA-3.7 during the 2012 season. These rain events triggered four post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 74-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event	BMP-22895	05-01-2012
Annual Erosion Evaluation	COMP-23451	05-29-2012
Storm Rain Event	BMP-24993	07-19-2012
Storm Rain Event	BMP-26270	08-08-2012
Storm Rain Event	BMP-28745	10-19-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 74-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-29103	Added rock to rock berm S00703120004 to build up and extend.	10-25-2012	6 day(s)	Maintenance conducted in timely manner.

#### 74.5 Compliance Status

The Site associated with S-SMA-3.7 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 74-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
AOC 53-012(e)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

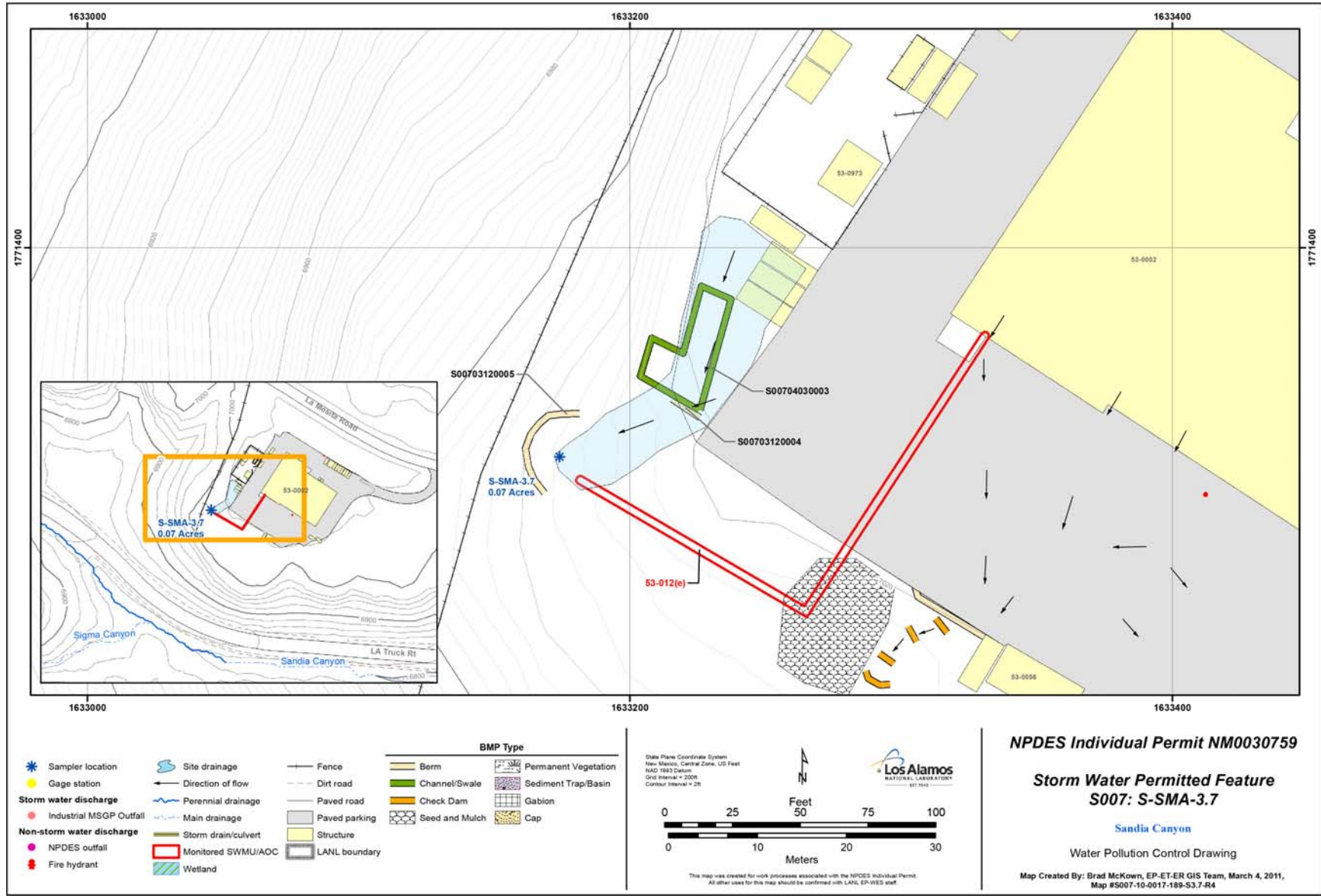


Figure 74-1 S-SMA-3.7 location map

**75.0 S-SMA-3.71: SWMU 53-001(a)**

**75.1 Site Descriptions**

One historical industrial activity area is associated with S008, S-SMA-3.71: Site 53-001(a).

SWMU 53-001(a) is an outdoor storage area located on the north side of the TA-53 equipment test laboratory, building 53-2. This storage area consists of a covered concrete pad currently serving as a drum storage area for building 53-2. This area was also formerly used as a satellite accumulation area (SAA). Non-PCB dielectric oil is currently stored on the concrete pad. The pad is surrounded by a concrete curb to provide secondary containment. A drain valve located in the northwest corner of the curbed area was previously used to release accumulated rainwater but is now plugged. The storage area is believed to have been first used in 1968 when operations at building 53-2 began. A 1989 photograph of the area shows the site to look much as it does today. In 1992, the site was no longer used as an SAA. A Laboratory listing of waste-accumulation areas dated April 1993 notes the SAA on the north side of building 53-2 was removed. The site was inspected in 1993 during preparation of the RFI work plan, and no evidence of staining or releases was noted.

The project map (Figure 75-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

**75.2 Control Measures**

Run-on from the paved area east of the SWMU is minimal. Most of the flow generated by the paved area east of the SMA travels south of the SWMU boundary and impacts the southernmost asphalt swale. Some run-on from the hill slope north of the gabion structure flows south and over the gabions onto the paved area north of the SWMU. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 75-1).

**Table 75-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
S00802010003	Established Vegetation - Grasses and Shrubs			X		CB
S00803010013	Berms - Earthen	X			X	B
S00803010014	Berms - Earthen		X		X	B
S00804020002	Channel/Swale - Concrete/Asphalt		X	X		CB
S00806010008	Check Dam - Rock		X		X	CB
S00806010009	Check Dam - Rock		X		X	CB
S00806010010	Check Dam - Rock		X		X	CB
S00806010011	Check Dam - Rock		X		X	CB
S00807010001	Gabions - Gabions	X			X	CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

### 75.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at S-SMA-3.71. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 75.4 Inspections and Maintenance

RG203 recorded four storm events at S-SMA-3.71 during the 2012 season. These rain events triggered four post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 75-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event	BMP-22896	05-01-2012
Annual Erosion Evaluation	COMP-23452	05-29-2012
Storm Rain Event	BMP-24994	07-19-2012
Storm Rain Event	BMP-26271	08-08-2012
Storm Rain Event	BMP-28746	10-19-2012

There were no maintenance activities conducted at S-SMA-3.71 in 2012.

### 75.5 Compliance Status

The Site associated with S-SMA-3.71 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 75-3 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 53-001(a)	Baseline Monitoring	Baseline Monitoring Extended	No Comment



S-SMA-3.71, Rock Check Dam, S00806010008 (photo ID 8515-2)



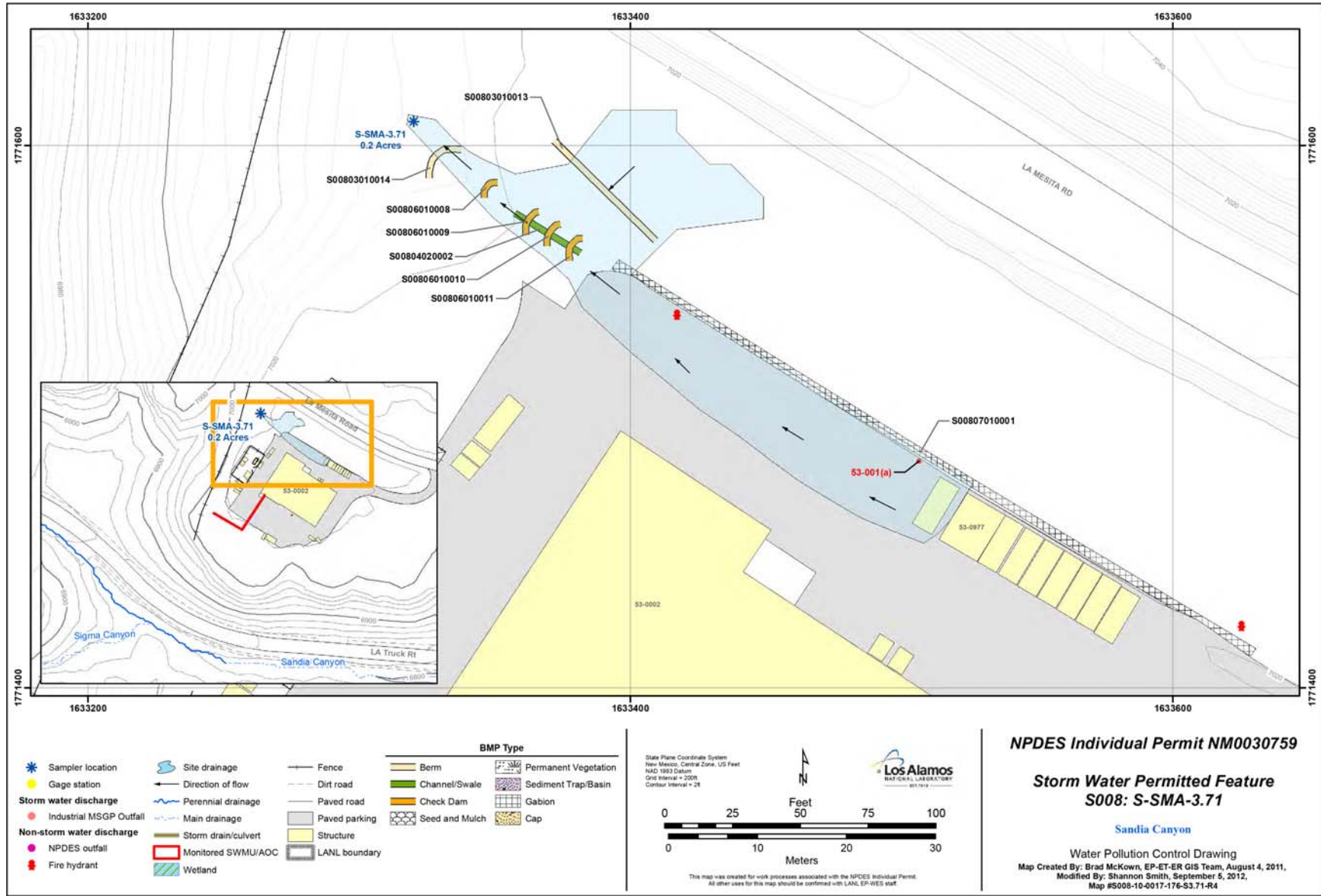


Figure 75-1 S-SMA-3.71 location map



## 76.0 S-SMA-3.72: SWMU 53-001(b)

### 76.1 Site Descriptions

One historical industrial activity area is associated with S009, S-SMA-3.72: Site 53-001(b).

SWMU 53-001(b) is an outdoor storage area located on a concrete pad that rests on the asphalt parking lot on the south side of the TA-53 equipment test laboratory, building 53-2. Before 1990, this area consisted of drum racks used to store drums of products and wastes associated with maintenance activities conducted in building 53-2. Wastes included spent trichloroethene, Freon, other solvents, and acidic waste. Engineering drawings show the storage area was constructed in 1971. A photograph taken in 1989 shows the storage area contained drums, some of which were product and some of which were marked with hazardous waste labels. In addition, the photograph identifies no staining, suggesting no spills or leakage occurred. In 1990, the drum racks were removed and replaced with four lockable flammable-material storage cabinets. The site was inspected during preparation of the RFI work plan in 1993, and again no evidence of staining or releases was noted. The Laboratory's current waste-site database indicates this storage location also contained a less-than-90-day storage area that was removed (i.e., taken out of service) in 1998. The site currently contains flammable-material storage cabinets, which are used for product storage but not for waste storage.

The project map (Figure 76-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 76.2 Control Measures

Roof drains are the primary run-on source to the Permitted Feature, along with the impervious paved area south of building 53-0002. The roof drains are positioned to the east and west of the SWMU and do not impact the concrete pad or former drum storage area. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 76-1).

**Table 76-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
S00902010001	Established Vegetation - Grasses and Shrubs			X		CB
S00902020002	Established Vegetation - Forested/Needle Cast			X		CB
S00903010009	Berms - Earthen	X			X	B
S00903010010	Berms - Earthen		X		X	B
S00903120003	Berms - Rock	X			X	CB
S00906010005	Check Dam - Rock		X		X	CB
S00906010006	Check Dam - Rock		X		X	CB
S00906010007	Check Dam - Rock		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

**76.3 Storm Water Monitoring**

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at S-SMA-3.72. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

**76.4 Inspections and Maintenance**

RG203 recorded four storm events at S-SMA-3.72 during the 2012 season. These rain events triggered four post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 76-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event	BMP-22897	05-01-2012
Annual Erosion Evaluation	COMP-23453	05-29-2012
Storm Rain Event	BMP-24995	07-19-2012
Storm Rain Event	BMP-26272	08-08-2012
Storm Rain Event	BMP-28747	10-19-2012

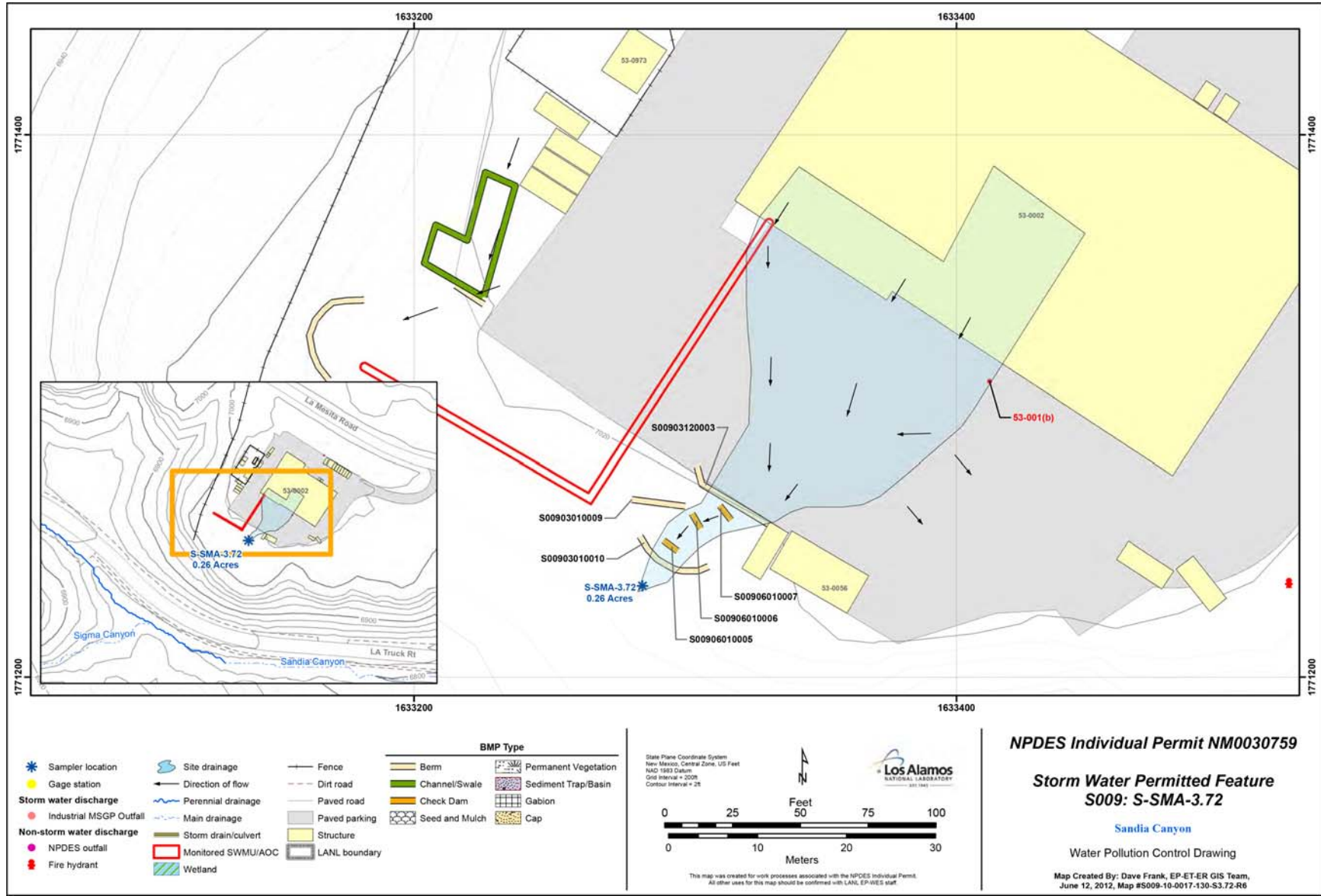
There were no maintenance activities conducted at S-SMA-3.72 in 2012.

**76.5 Compliance Status**

The Site associated with S-SMA-3.72 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 76-3 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 53-001(b)	Baseline Monitoring	Baseline Monitoring Extended	No Comment



**Figure 76-1 S-SMA-3.72 location map**

**77.0 S-SMA-3.95: SWMU 20-002(a)**

**77.1 Site Descriptions**

One historical industrial activity area is associated with S010, S-SMA-3.95: Site 20-002(a).

SWMU 20-002(a) is the location of a former firing pit (structure 20-6) used from 1945 to 1948 to conduct initiator tests. The firing pit was located on the far west end of former TA-20, south of East Jemez Road. The steel-lined pit was constructed following the failure of the Dumbo [a contained firing vessel, see description of SWMU 20-002(b)]. The firing pit had interior dimensions of 14 ft 8 in. × 14 ft 8 in. × 12 ft deep. The walls and floor of the pit consisted of 0.75-in.-thick steel plate backed by 12 in. × 12-in. timbers. The pit was covered by a steel framework overlain by a mat of 0.25-in.-diameter steel rods spaced 1 in. apart. According to a 1947 report, the framework and mat, presumably installed to contain shot debris, failed after the first few shots. Laboratory facility engineering records indicate the pit was removed in April 1948. A memorandum dated April 20, 1948, describing cleanup efforts in Sandia Canyon notes that one “cage” was excavated and that the “interior checked negative after clearing.” The SWMU 20-002(a) firing pit is presumed to be the “cage” referred to in the memorandum.

The project map (Figure 77-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

**77.2 Control Measures**

The northwestern edge of the SMA contains a drop inlet that directs storm water across the area. The canyon drainage runs through the bottom of the SMA and should be monitored for any undercutting of the Site. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 77-1).

**Table 77-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
S01002010002	Established Vegetation - Grasses and Shrubs			X		CB
S01003060005	Berms - Straw Wattles	X			X	B
S01003060006	Berms - Straw Wattles		X		X	B

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

**77.3 Storm Water Monitoring**

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at S-SMA-3.95. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

**77.4 Inspections and Maintenance**

RG203 recorded four storm events at S-SMA-3.95 during the 2012 season. These rain events triggered four post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 77-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event	BMP-22899	05-01-2012
Annual Erosion Evaluation	COMP-23454	05-29-2012
Storm Rain Event	BMP-24997	07-19-2012
Storm Rain Event	BMP-26274	08-08-2012
Storm Rain Event	BMP-28749	10-19-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 77-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-29104	Installed new straw wattle S01003060005 in same location as wattle -0003, which was retired.	10-24-2012	5 day(s)	Maintenance conducted in timely manner.
BMP-29105	Installed new straw wattle S01003060006 in same location as wattle -0004, which was retired.	10-24-2012	5 day(s)	Maintenance conducted in timely manner.

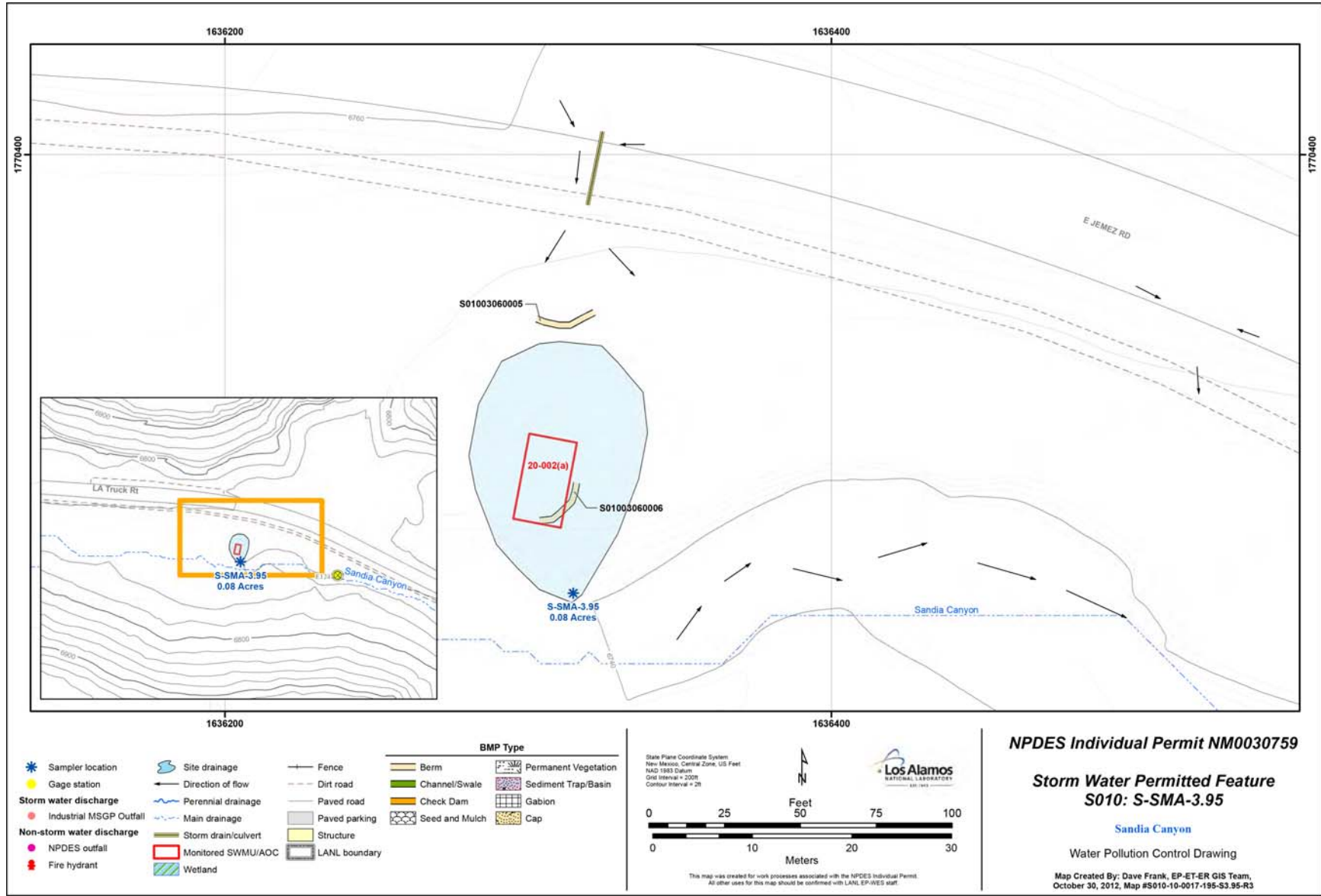
**77.5 Compliance Status**

The Site associated with S-SMA-3.95 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 77-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 20-002(a)	Baseline Monitoring	Baseline Monitoring Extended	No Comment





**Figure 77-1 S-SMA-3.95 location map**

**78.0 S-SMA-4.1: AOC 53-014**

**78.1 Site Descriptions**

One historical industrial activity area is associated with S011, S-SMA-4.1: Site 53-014.

AOC 53-014, a lead shot spill site, is located at a paved storage area in TA-53 west of building 53-18. Lead shot was spilled on the paved surface, and storm water washed the lead into an asphalt-lined channel that joins a drainage below an NPDES-permitted outfall (03A113). The lead shot was observed at a number of locations in the channel but was not seen below a large catchment approximately 50 ft below the canyon rim. This site was not originally identified in the 1990 SWMU Report because it was discovered in 1996. The investigation of AOC 53-014 concluded that no potential unacceptable risks or doses to human health exist under the industrial, construction worker, and residential scenarios, and no potential risk to ecological receptors exists. The potential contaminant associated with industrial materials historically managed at this site is lead. No further investigation or remediation activities are warranted at AOC 53-014; approval of corrective actions complete without controls is pending.

The project map (Figure 78-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

**78.2 Control Measures**

Run-on from paved areas at this SMA is currently managed by a berm. A paved area next to the western side of the SMA provides some contribution. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 78-1).

Enhanced controls were installed and certified on October 25, 2012, as part of corrective action. Photographs of the enhanced controls are available at <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/construction-certifications.php>.

**Table 78-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
S01101010007	Seed and Mulch - Seed and Wood Mulch			X		EC
S01103060010	Berms - Straw Wattles		X		X	B
S01103060011	Berms - Straw Wattles		X		X	B
S01103090005	Berms - Curbing	X			X	EC
S01103120008	Berms - Rock		X		X	EC
S01104020006	Channel/Swale - Concrete/Asphalt	X		X		EC
S01108030009	Cap - Asphalt	X		X		EC

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

### 78.3 Storm Water Monitoring

AOC 53-014 is monitored within S-SMA-4.1. Following the installation of baseline control measures, a baseline storm water sample was collected on August 2, 2011, and September 1, 2011 (Figures 78-2 and 78-3). Analytical results from this sample yielded one TAL exceedances:

- PCB concentrations of 1 and 4 ng/L (ATAL is 0.6 ng/L).

These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

*AOC 53-014:* The potential contaminant associated with industrial materials historically managed at this Site is lead.

- Samples were not collected during the 2010 Consent Order investigation because the Site had previously been characterized by sampling performed during a 1997 VCA conducted to remove lead contamination.
- PCBs—VCA samples were not analyzed for PCBs because PCBs were not identified as potential contaminants at this Site.

In summary, PCBs are not known to be associated with industrial materials historically managed at the Site. Based on site history, the Site is an unlikely source of PCBs above ATAL in storm water.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figures 78-2 and 78-3. UTLs developed for urban settings were derived from runoff from developed landscapes on the Pajarito Plateau, including buildings, parking lots, roads, and associated features, and are labeled “Developed Background” in Figures 78-2 and 78-3.

Monitoring location S-SMA-4.1 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as from landscape consisting of Bandelier Tuff sediment. PCBs are associated with building materials including paint, caulking, asphalt, solvents, transformers, and cutting oils.

- PCB—The PCB UTL from developed urban landscape storm water run-on is 98 ng/L; the PCB UTL for storm water containing sediments derived from Bandelier Tuff is 11.7 ng/L. The PCB results from 2011 are both less than these two values.

All the analytical results for these samples are reported in the 2011 Annual Report.

### 78.4 Inspections and Maintenance

RG-TA-53 recorded four storm events at S-SMA-4.1 during the 2012 season. These rain events triggered four post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 78-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Visual	COMP-20995	03-26-2012
Annual Erosion Evaluation	COMP-23455	03-26-2012
Storm Rain Event	BMP-26284	08-09-2012
Storm Rain Event	BMP-27089	08-28-2012
Enhanced Control Measure Verification	BMP-27104	09-06-2012
Storm Rain Event	BMP-28083	10-03-2012
Storm Rain Event	BMP-28635	10-19-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 78-3 Maintenance during 2012**

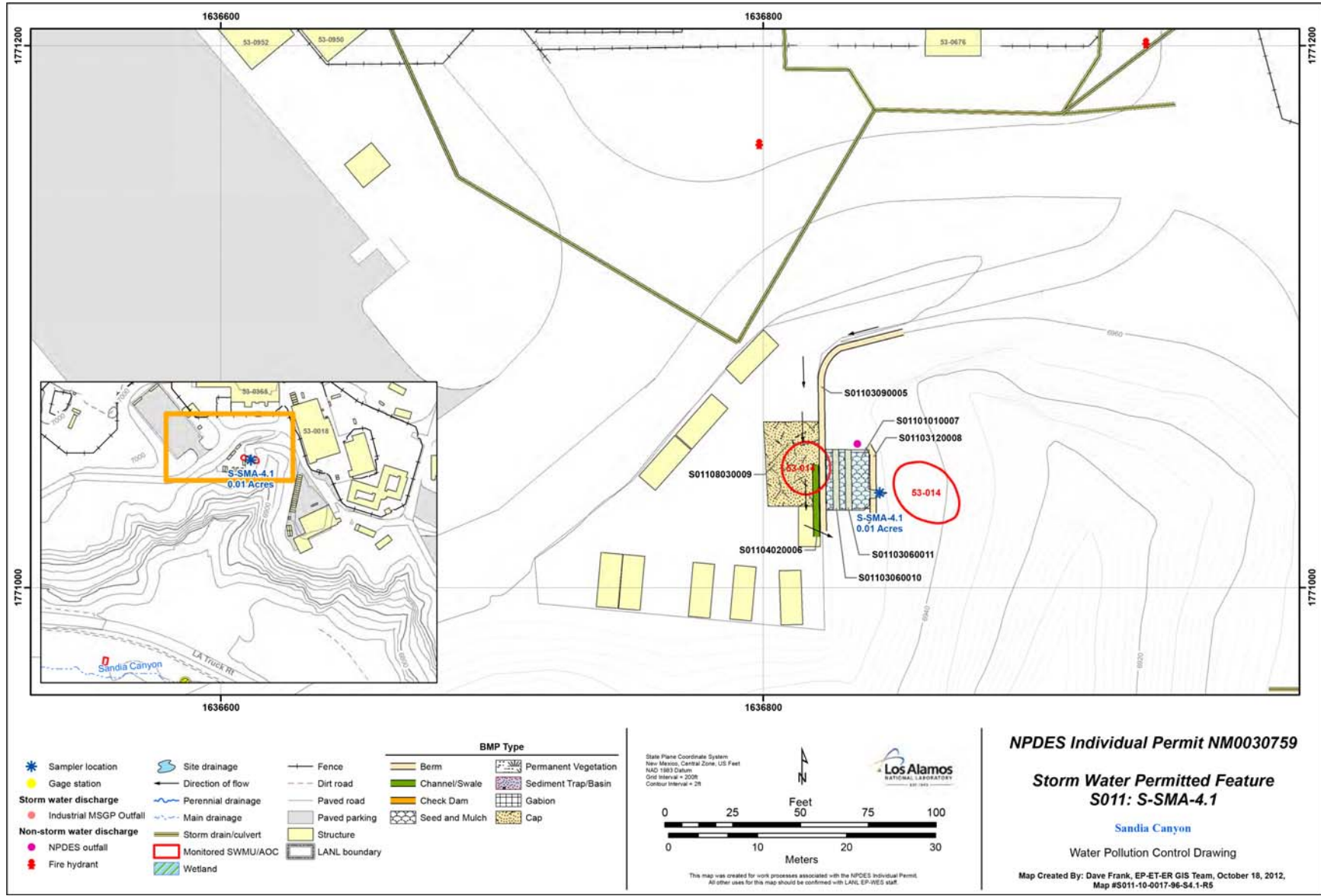
Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-28338	Installed new wattles S01103060010 and --0011 half way down slope to rock berm in order to prevent downhill wood chip migration.	10-11-2012	8 day(s)	Maintenance conducted in timely manner.
BMP-28339	Applied additional wood mulch to seed/mulch S01101010007.	10-11-2012	8 day(s)	Maintenance conducted in timely manner.
BMP-28340	Built up rock berm S01103120008.	10-11-2012	8 day(s)	Maintenance conducted in timely manner.

### 78.5 Compliance Status

The Site associated with S-SMA-4.1 is a high priority Site. Corrective action is to be certified complete within 3 yr of the effective date of the IP (i.e., November 2015).

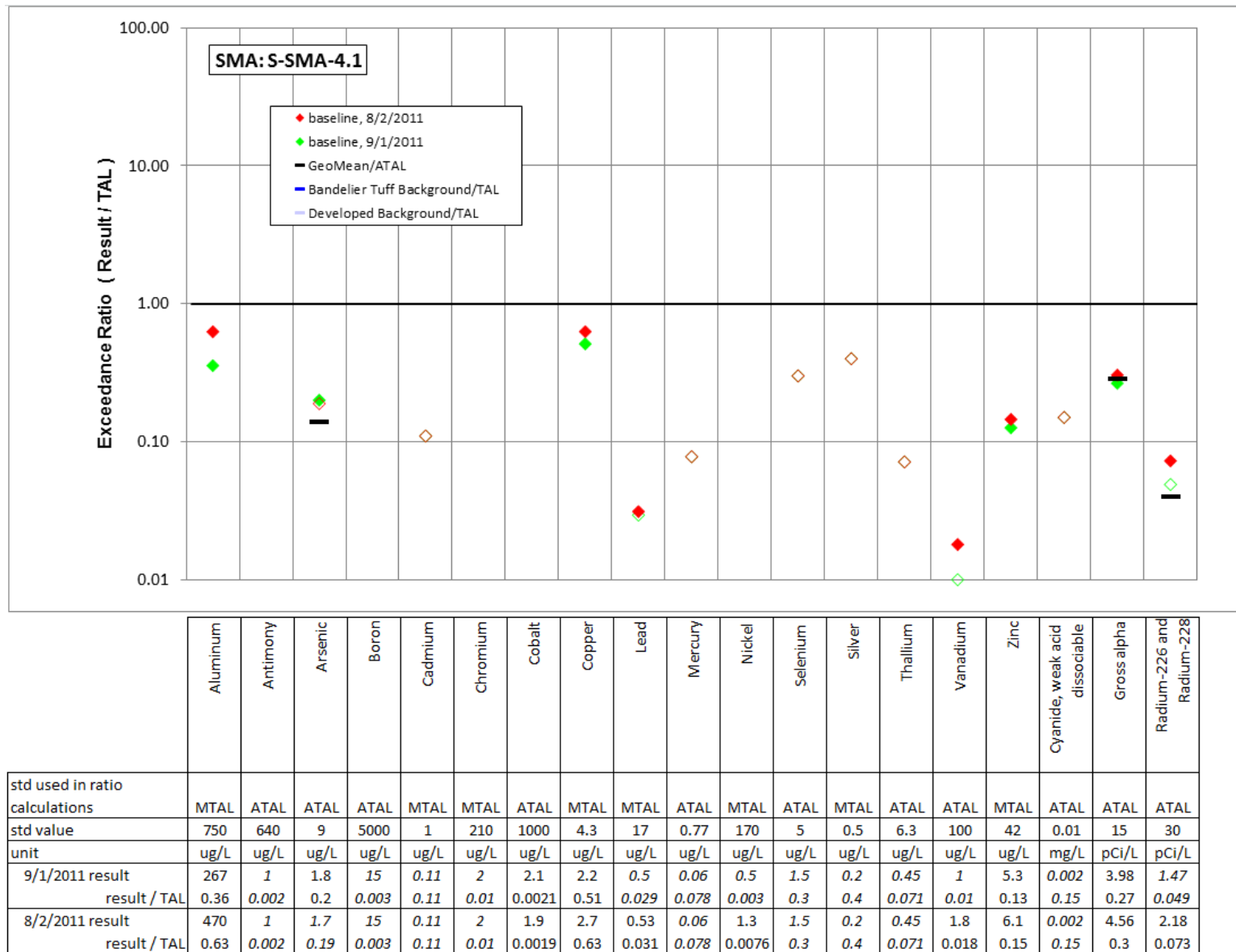
**Table 78-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
AOC 53-014	Corrective Action Initiated	Enhanced Control Corrective Action Monitoring	Initiated 09-25-2012



**Figure 78-1 S-SMA-4.1 location map**

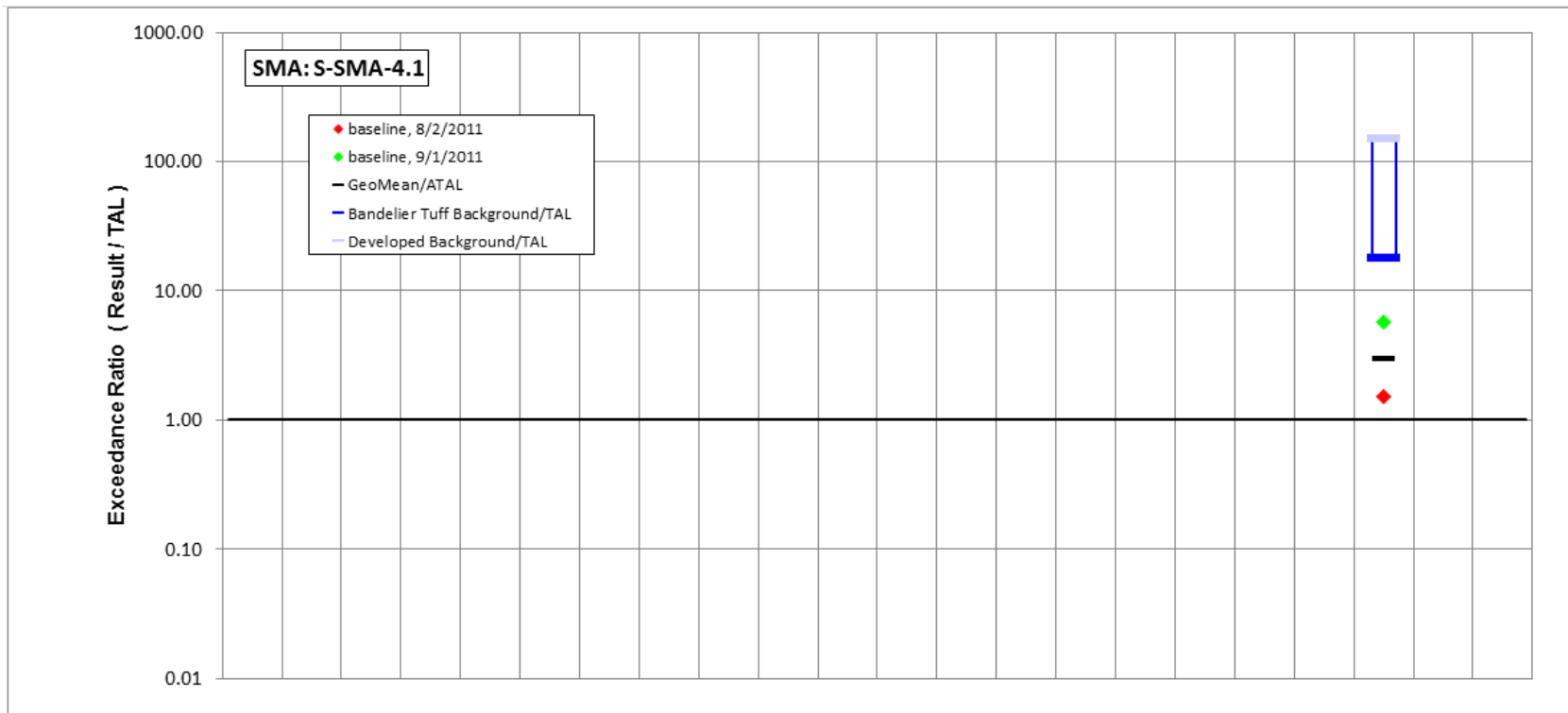




	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	Gross alpha	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
9/1/2011 result	267	1	1.8	15	0.11	2	2.1	2.2	0.5	0.06	0.5	1.5	0.2	0.45	1	5.3	0.002	3.98	1.47
result / TAL	0.36	0.002	0.2	0.003	0.11	0.01	0.0021	0.51	0.029	0.078	0.003	0.3	0.4	0.071	0.01	0.13	0.15	0.27	0.049
8/2/2011 result	470	1	1.7	15	0.11	2	1.9	2.7	0.53	0.06	1.3	1.5	0.2	0.45	1.8	6.1	0.002	4.56	2.18
result / TAL	0.63	0.002	0.19	0.003	0.11	0.01	0.0019	0.63	0.031	0.078	0.0076	0.3	0.4	0.071	0.018	0.15	0.15	0.3	0.073

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

**Figure 78-2 Inorganic analytical results summary plot for S-SMA-4.1**



	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	Total PCB	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	-	-
std value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6E-04	-	-
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
9/1/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>0.004</b>	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>5.7</b>	-	-
8/2/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>1E-03</b>	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>1.5</b>	-	-

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 78-3 Organic analytical results summary plot for S-SMA-4.1

**79.0 S-SMA-4.5: SWMU 20-002(d)**

**79.1 Site Descriptions**

One historical industrial activity area is associated with S012, S-SMA-4.5: Site 20-002(d).

SWMU 20-002(d) is a former firing point located near a manhole (structure 20-3) in the central part of former TA-20. Fewer than 10 implosion shots were fired near structure 20-3. One of these shots, containing 500 lb of Composition B, did not completely detonate. A 1962 Laboratory memorandum describes two cleanup efforts related to this incident: one conducted immediately after the incident and a second that was part of the 1948 Sandia Canyon cleanup conducted before the construction of East Jemez Road. Other historical documents indicate small pieces of high explosives (HE) were found and removed from this site at various times, including in July 1966, July 1967, and June 1969. No HE was found during inspections in April 1971, May 1973, and June 1975.

The project map (Figure 79-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

**79.2 Control Measures**

There is minimal potential for run-on impact from the truck route. The primary source of potential run-on is sheet flow from the unpaved access road used for well access and sheet flow generated at the vegetated area south of the SWMU. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 79-1).

**Table 79-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
S01202010001	Established Vegetation - Grasses and Shrubs			X		CB
S01203010005	Berms - Earthen		X		X	CB
S01203060002	Berms - Straw Wattles		X		X	CB
S01203060003	Berms - Straw Wattles		X		X	CB
S01203060006	Berms - Straw Wattles	X			X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

**79.3 Storm Water Monitoring**

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at S-SMA-4.5. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 79.4 Inspections and Maintenance

RG203 recorded four storm events at S-SMA-4.5 during the 2012 season. These rain events triggered four post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 79-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event	BMP-22898	05-01-2012
Annual Erosion Evaluation	COMP-23456	05-29-2012
Storm Rain Event	BMP-24996	07-19-2012
Storm Rain Event	BMP-26273	08-08-2012
Storm Rain Event	BMP-28748	10-19-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 79-3 Maintenance during 2012**

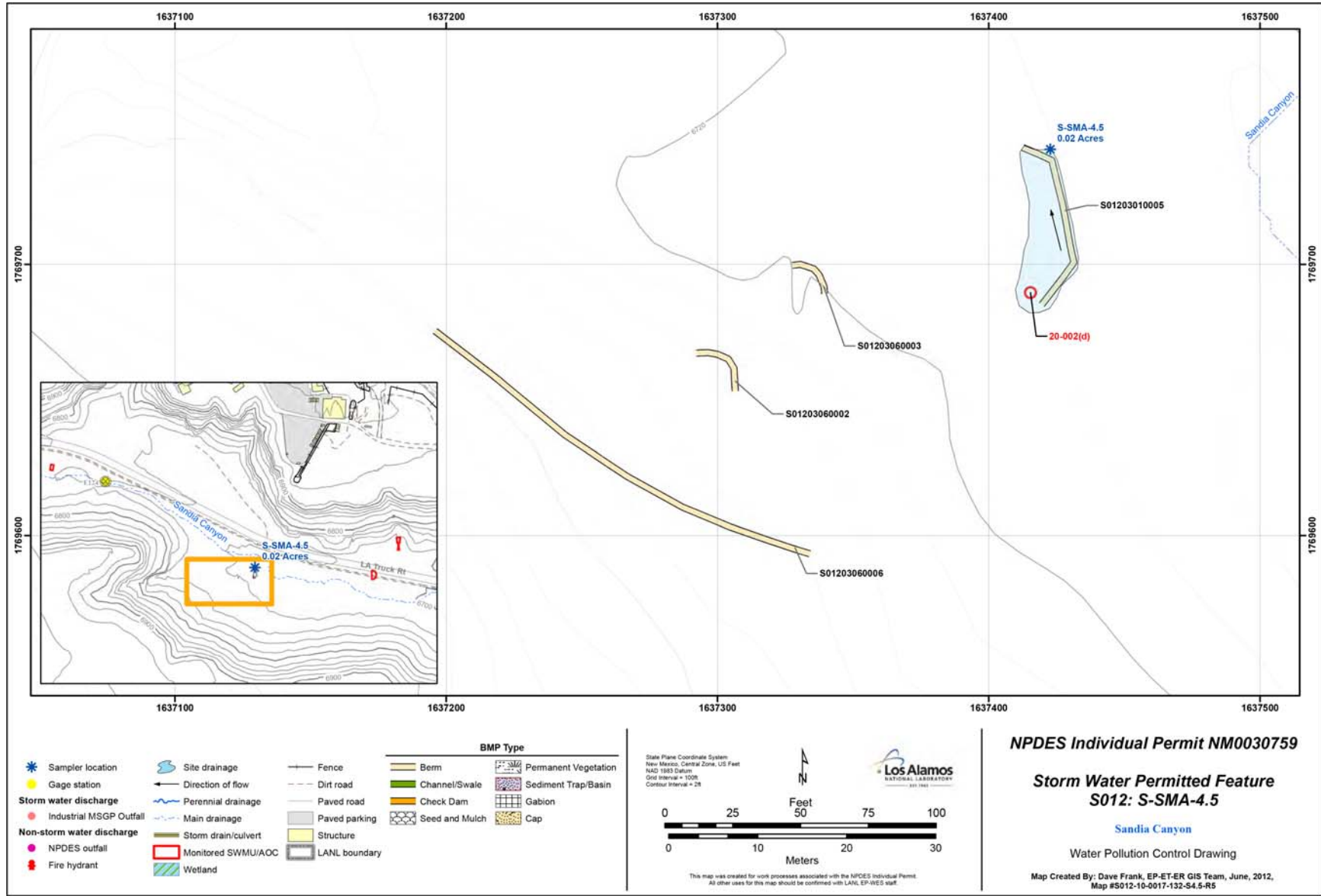
Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-23178	Repaired south end of berm S01203010005.	05-16-2012	15 day(s)	Maintenance conducted as soon as practicable.
BMP-23721	Installed new wattles S01203060006 directly upslope/southwest from existing wattles -0004, which were retired.	06-12-2012	14 day(s)	Maintenance conducted in timely manner.

### 79.5 Compliance Status

The Site associated with S-SMA-4.5 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 79-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 20-002(d)	Baseline Monitoring	Baseline Monitoring Extended	No Comment



**Figure 79-1 S-SMA-4.5 location map**



**80.0 S-SMA-5: SWMU 20-002(c)**

**80.1 Site Descriptions**

One historical industrial activity area is associated with S013, S-SMA-5: Site 20-002(c).

SWMU 20-002(c) is a former firing point located near the southern edge of TA-53 close to the boundary of TA-72. This firing point was used for tests with explosive charges of up to 50 lb. The firing point is depicted in engineering drawing ENG-C 1778, Revision 1, as a pad bordered on three sides by an earthen berm. Engineering records show that the structure associated with this firing point (structure 20-9) was removed in April 1948. A memorandum dated April 20, 1948, describing cleanup efforts in Sandia Canyon notes seven “shot areas” were excavated and the “ground checked negative after removal.” It is likely that the SWMU 20-002(c) firing point is one of the seven shot areas. The north side of this site is currently covered by the road embankment for East Jemez Road.

The project map (Figure 80-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

**80.2 Control Measures**

There is the potential for run-on to this SMA from the paved road, East Jemez Road. The receiving waters are approximately 10 to 20 ft south of the SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 80-1).

**Table 80-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
S01302010001	Established Vegetation - Grasses and Shrubs			X		CB
S01303010006	Berms - Earthen		X		X	CB
S01304060003	Channel/Swale - Riprap	X		X		CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

**80.3 Storm Water Monitoring**

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at S-SMA-5. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

**80.4 Inspections and Maintenance**

RG-TA-53 recorded four storm events at S-SMA-5 during the 2012 season. These rain events triggered four post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 80-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23457	05-29-2012
Storm Rain Event	BMP-26285	08-09-2012
Storm Rain Event	BMP-27090	08-29-2012
Storm Rain Event	BMP-28084	10-03-2012
Storm Rain Event	BMP-28636	10-19-2012

There were no maintenance activities conducted at S-SMA-5 in 2012.

**80.5 Compliance Status**

The Site associated with S-SMA-5 is a high priority Site. Corrective action is to be certified complete within 3 yr of the effective date of the IP (i.e., November 2015).

**Table 80-3 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 20-002(c)	Baseline Monitoring	Baseline Monitoring Extended	No Comment



S-SMA-5, Permanent Vegetation Grasses and Shrubs, S01302010001 (photo ID 7457-2)

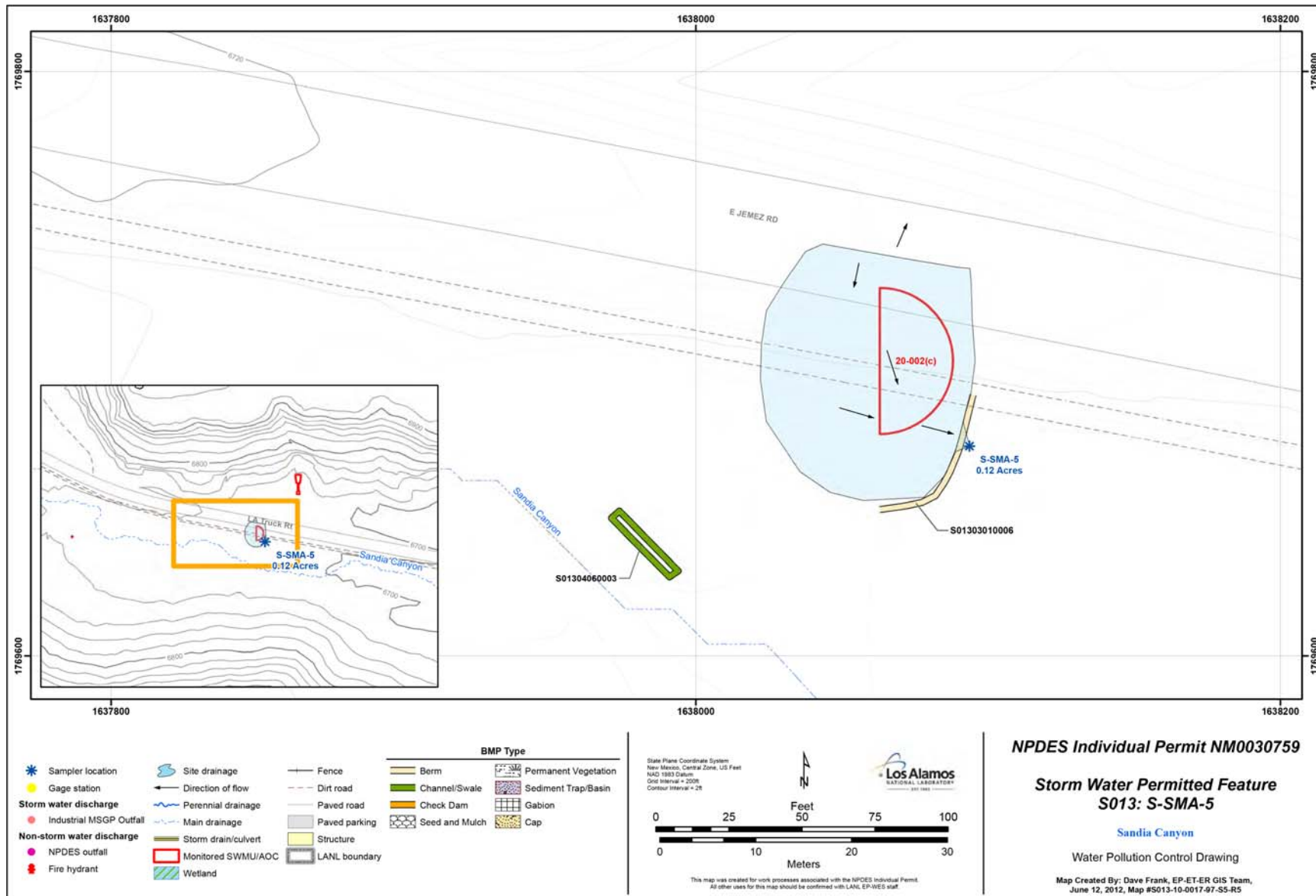


Figure 80-1 S-SMA-5 location map



**81.0 S-SMA-5.2: AOC 20-003(c)**

**81.1 Site Descriptions**

One historical industrial activity area is associated with S014, S-SMA-5.2: Site 20-003(c).

AOC 20-003(c) is the site of a former U.S. Navy gun mount that was located approximately 90 ft north of East Jemez Road in Sandia Canyon. Together with SWMUs 20-001(b) and 20-002(c), AOC 0-003(c) comprises Consolidated Unit 20-001(b)-00. The former gun site was used between 1945 and 1948.

A 10-ft × 10-ft concrete pad with a steel plate surface (structure 20-16) was used as a mount for the gun. Engineering drawing ENG-C 1778 shows a 30-ft-long earth-bermed timber frame bin filled with tamped earth (structure 20-10) located near the gun and on the slope at the toe of the canyon wall. At the end nearest the gun, the timber frame was 12 ft wide and 10 ft high, and at the far end it was 20 ft wide and 5 ft high. The gun was fired into the earth-filled bin so the projectile could be recovered. Laboratory engineering records show that in April 1948 structures 20-10 and 20-16 were removed and that structure 20-28, a conduit manhole, was left in place. The disposition of the soil that filled the frame is not known. The site was cleaned up in a 1995 VCA conducted by Laboratory personnel. Four feet of the concrete pad and the manholes were removed. The remaining pieces of the concrete pad were buried under 5 to 6 ft of backfill. Approximately 21.5 yd<sup>3</sup> of concrete debris was hauled to the Los Alamos County Landfill.

The project map (Figure 81-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

**81.2 Control Measures**

Control measures on the mesa top at this SMA are managing the culvert run-on contribution from the storm water discharges from the paved areas on the mesa above. The rock check dam along the eastern side of the SMA helps to control this run-on source. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 81-1).

**Table 81-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
S01402010002	Established Vegetation - Grasses and Shrubs			X		CB
S01403060014	Berms - Straw Wattles		X		X	B
S01403060015	Berms - Straw Wattles		X		X	B
S01404060011	Channel/Swale - Riprap	X		X		CB
S01406010006	Check Dam - Rock	X			X	CB
S01406010007	Check Dam - Rock	X			X	CB
S01406010008	Check Dam - Rock	X			X	CB
S01406010009	Check Dam - Rock	X			X	CB
S01406010010	Check Dam - Rock	X			X	CB
S01406010012	Check Dam - Rock		X		X	CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

### 81.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at S-SMA-5.2. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 81.4 Inspections and Maintenance

RG-TA-53 recorded four storm events at S-SMA-5.2 during the 2012 season. These rain events triggered four post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 81-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23458	05-29-2012
Storm Rain Event	BMP-26286	08-09-2012
Storm Rain Event	BMP-27091	08-29-2012
Storm Rain Event	BMP-28085	10-03-2012
Storm Rain Event	BMP-28637	10-19-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 81-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-26558	Installed new straw wattle S01403060014 directly above existing wattle -0004, which was retired.	08-16-2012	7 day(s)	Maintenance conducted in timely manner.
BMP-26559	Installed new straw wattle S01403060015 directly above existing wattle -0005, which was retired.	08-16-2012	7 day(s)	Maintenance conducted in timely manner.
BMP-26560	Cleared eroding asphalt blocking culvert from riprap S01404060011, also added rock to riprap.	08-17-2012	8 day(s)	Maintenance conducted in timely manner.

### 81.5 Compliance Status

The Site associated with S-SMA-5.2 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 81-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
AOC 20-003(c)	Baseline Monitoring	Baseline Monitoring Extended	No Comment



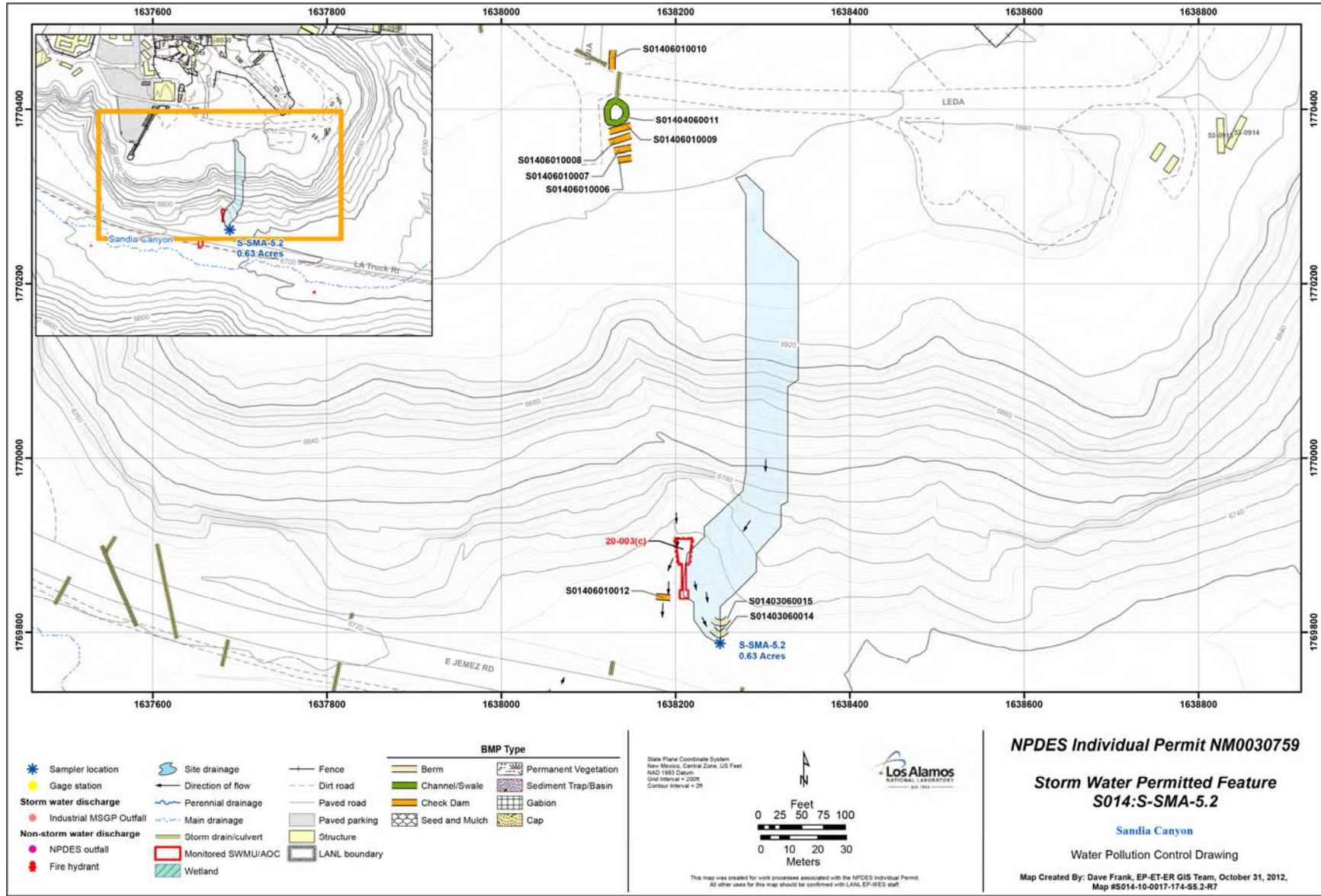


Figure 81-1 S-SMA-5.2 location map

## 82.0 S-SMA-5.5: SWMU 20-005

### 82.1 Site Descriptions

One historical industrial activity area is associated with S015, S-SMA-5.5: Site 20-005.

SWMU 20-005 is a former septic system (septic tank and drainlines) that was located south of East Jemez Road in the central portion of the aggregate area. The system served a toilet, restroom sink, and darkroom sink in building 20-1. The system was constructed in 1945, and its use was discontinued in 1948. Engineering drawings show the tank (structure 20-27) as having 6-in.-thick concrete walls with interior dimensions of 3 ft × 6 ft × 5 ft high and a capacity of 540 gal. The discharge point of the tank is not known. The septic system could not be located during a 1985 program conducted by the Laboratory to remove existing structures from Sandia Canyon. Although the tank could not be located, a pit-like depression was noted in the tuff in the area where the tank was believed to have been located. According to the 1985 report, excavation surrounding the area of the “pit” turned up no evidence of the tank or associated drainlines.

The project map (Figure 82-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 82.2 Control Measures

There is minimal potential for run-on impacts at this SMA. Potential run-on in the form of sheet flow may be generated in the vegetated area north of the SWMU. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 82-1).

**Table 82-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
S01502010001	Established Vegetation - Grasses and Shrubs			X		CB
S01503010004	Berms - Earthen		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 82.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at S-SMA-5.5. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 82.4 Inspections and Maintenance

RG-TA-53 recorded four storm events at S-SMA-5.5 during the 2012 season. These rain events triggered four post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 82-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23459	05-29-2012
Storm Rain Event	BMP-26287	08-09-2012
Storm Rain Event	BMP-27092	08-29-2012
Storm Rain Event	BMP-28086	10-03-2012
Storm Rain Event	BMP-28638	10-19-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 82-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-27213	Reseeded and matted berm S01503010004.	09-05-2012	7 day(s)	Maintenance conducted in timely manner.

**82.5 Compliance Status**

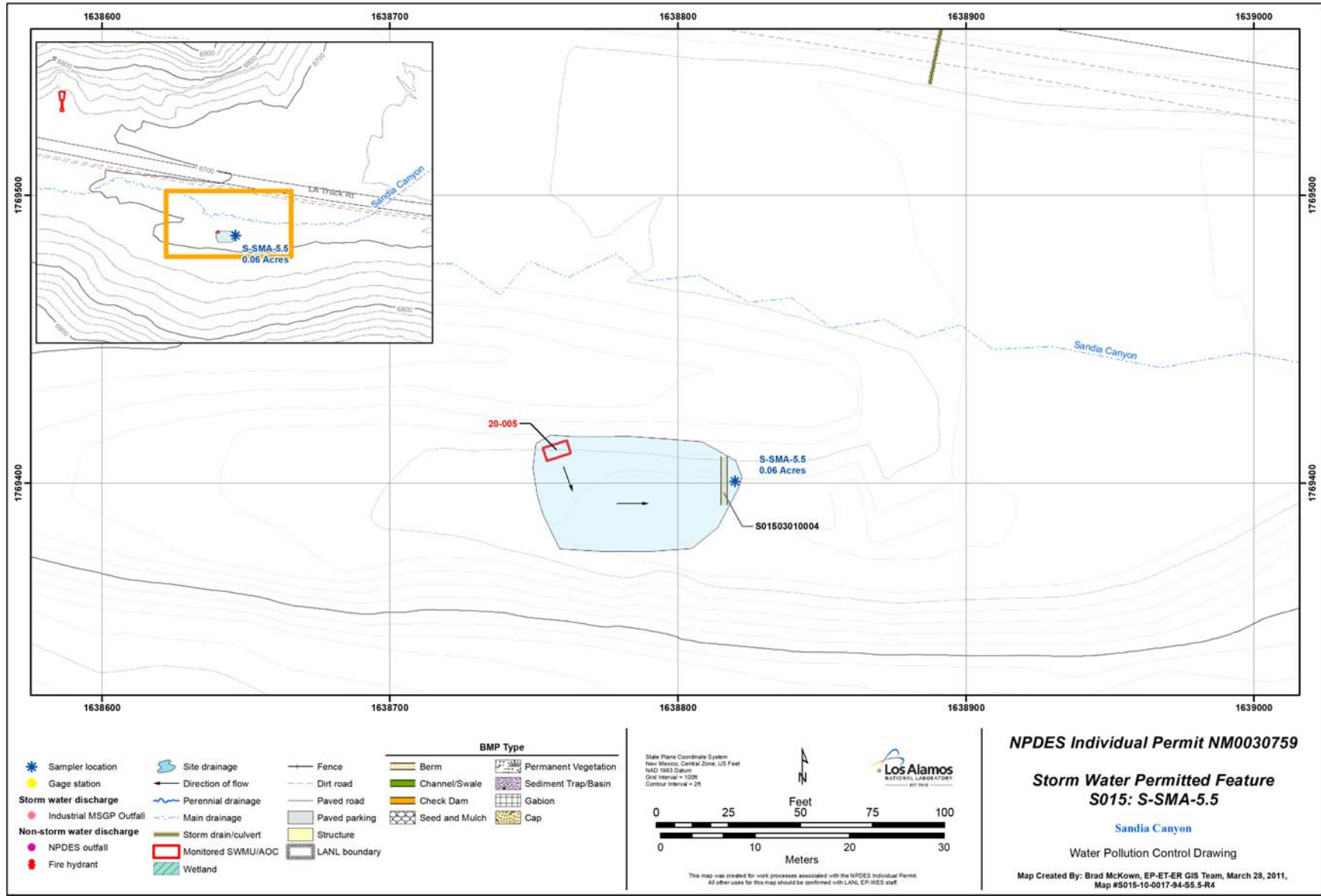
The Site associated with S-SMA-5.5 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 82-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 20-005	Baseline Monitoring	Baseline Monitoring Extended	No Comment







**Figure 82-1 S-SMA-5.5 location map**

**83.0 S-SMA-6: AOC 72-001**

**83.1 Site Descriptions**

One historical industrial activity area is associated with S016, S-SMA-6: Site 72-001.

AOC 72-001 is an active small-arms firing and training range used by the Laboratory’s security force. The firing range is located in Sandia Canyon at the west end of TA-72 and has operated since 1966. It includes a 175-ft × 250-ft pistol firing range surrounded by earthen berms and an adjacent 50-m firing range (Range 3) to the north. The drainage channel and flood plain of Sandia Canyon run between the pistol range and the 50-m range. Structures at this site, but that are not part of AOC 72-001, include an office building (building 72-8, a former guard station), range house (building 72-9), scoring area (building 72-10), firing station (building 72-11), weapons-cleaning area (building 72-12), storage buildings (72-13 and 72-14), and canopies 3 and 4 (buildings 72-15 and 72-16). Lead is present within the firing range because bullets are scattered at the base of the berms and cliffs. In 1995, approximately 4660 yd<sup>3</sup> of the lead-contaminated soil from SWMU 00-016 was transported to TA-72 and placed on the berms located along the north side of the AOC 72-001 firing range and along the berm located between, and north of, canopies 3 and 4. Potential contaminants associated with industrial materials historically managed at this Site are metals, including aluminum, copper, and lead.

The project map (Figure 83-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

**83.2 Control Measures**

Potential run-on at this SMA originates at the CMPs discharging urban flow onto the SMA. There is also potential for flow from the Sandia Canyon main channel onto the southern portion of the SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 83-1).

**Table 83-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
S01602010003	Established Vegetation - Grasses and Shrubs			X		CB
S01603010006	Berms - Earthen	X			X	CB
S01603010008	Berms - Earthen		X		X	CB
S01603010009	Berms - Earthen		X		X	CB
S01603140010	Berms - Coir Log		X		X	CB
S01603140011	Berms - Coir Log		X		X	CB
S01604060004	Channel/Swale - Riprap	X		X		CB
S01606010005	Check Dam - Rock	X			X	CB
S01606010007	Check Dam - Rock	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.



Enhanced control measures will be installed in the second quarter of 2013 as part of corrective action.

### 83.3 Storm Water Monitoring

AOC 72-001 is monitored within S-SMA-6. Following the installation of baseline control measures, a baseline storm water sample was collected on July 30, 2011, and August 19, 2011 (Figures 83-2 and 83-3). Analytical results from this sample yielded five TAL exceedances:

- Aluminum concentration of 1470 µg/L (MTAL is 750 µg/L),
- Copper concentrations of 6.1 and 8.6 µg/L (MTAL is 4.3 µg/L),
- Gross-alpha activities of 867 and 6140 pCi/L (ATAL is 15 pCi/L),
- Radium-226 and radium-228 activity of 44.3 pCi/L (ATAL is 30 pCi/L), and
- PCB concentrations of 1050 and 4590 ng/L (ATAL is 0.6 ng/L).

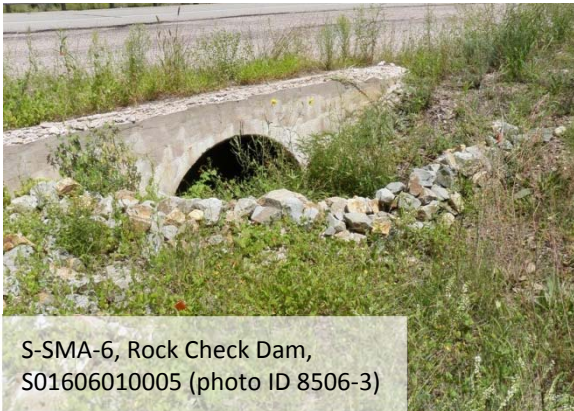
These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

*AOC 72-001:* Potential contaminants associated with industrial materials historically managed at this Site are metals, including aluminum, copper, and lead.

- Samples were not collected during the 2010 Consent Order investigation because further characterization of this Site is being delayed until the Site is no longer active.
- Sediment samples were collected slightly downstream of this Site during a RFI conducted in 1995.
  - ❖ Aluminum—Aluminum was not detected above BV in RFI samples.
  - ❖ Copper—Copper was not detected above BV in RFI samples.
  - ❖ Cyanide—RFI samples were not analyzed for cyanide because cyanide was not identified as potential contaminants for this Site.
  - ❖ PCBs—RFI samples were not analyzed for PCBs because PCBs were not identified as potential contaminants for this Site.
  - ❖ Gross alpha—RFI samples were not analyzed for alpha-emitting radionuclides because alpha-emitting radionuclides were not identified as potential contaminants for this Site.
  - ❖ Radium—RFI samples were not analyzed for radium-226 or radium-228 because they were not identified as potential contaminants for this Site.
- The Phase I Consent Order investigation of Sandia Canyon, which was completed in 2009, included collection of sediment samples from Reaches S-4E and S-5C, located just upstream and downstream of AOC 72-001, respectively.
  - ❖ Aluminum—Aluminum was below BV in sediment samples from both reaches.
  - ❖ Cyanide—Total cyanide was below BV in sediment samples from both reaches.
  - ❖ Copper—Copper was detected at maximum concentrations 1.6 times and 1.4 times BV for sediment samples in Reaches S-4E and S-5C, respectively.
  - ❖ PCBs—PCBs were detected at maximum concentrations 10% and 8% of the residential SSL in sediment samples from Reaches S-4E and S-5C, respectively.

- ❖ Gross alpha—Alpha-emitting radionuclides americium-241, plutonium-238, thorium-228, thorium-232, uranium-234, uranium-235/236, and uranium-238 were below BVs/FVs in soil samples from both reaches. Alpha-emitting nuclide plutonium-239 was detected at a maximum activity 25 times FV in sediment samples from Reach S-4E but was below FV in sediment samples from Reach S-5C.
- ❖ Radium—Canyons investigation sediment samples were not analyzed for radium-226 or radium-228.

In summary, aluminum, cyanide, PCBs, and alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at this Site. Aluminum and total cyanide were below BVs. PCBs were detected at low concentrations well below residential SSLs, and concentrations were higher in upstream reach samples than in downstream reach samples. Only one alpha-emitting radionuclide, plutonium-239, was detected above BV/FV. Plutonium-239 was detected above FV in upstream reach samples but not in downstream reach samples. In addition, plutonium isotopes are excluded from the definition of adjusted gross-alpha radioactivity. Based on site history and previous sampling results, the Site is an unlikely source of weak acid dissociable cyanide, PCBs, and adjusted gross alpha above ATALs and aluminum above MTAL in storm water. Copper is known to be associated with industrial material historically managed at this Site but was not detected above BV in sediment samples collected during



S-SMA-6, Rock Check Dam, S01606010005 (photo ID 8506-3)

RFI or Canyons investigation. Based on previous sampling results, the Site is an unlikely source of copper above MTAL in storm water. Radium is not known to be associated with industrial materials historically managed at the Site. Based on site history, the Site is an unlikely source of radium-226 and radium-228 above ATAL in storm water.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as

UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figures 83-2 and 83-3. UTLs developed for urban settings were derived from runoff from developed landscapes on the Pajarito Plateau, including buildings, parking lots, roads, and associated features, and are labeled “Developed Background” in Figures 83-2 and 83-3.

Monitoring location S-SMA-6 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as from landscape consisting of Bandelier Tuff sediment. Metals including copper and aluminum are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Aluminum—The aluminum UTL from developed urban landscape storm water run-on is 245 µg/L; the aluminum UTL for storm water containing sediments derived from Bandelier Tuff is 2210 µg/L. The aluminum result from 2011 is between these values.
- Copper—The copper UTL from developed urban landscape storm water run-on is 32.3 µg/L; the copper UTL for storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L. The copper results from 2011 are both between these two values.

- Gross alpha—The gross-alpha UTL from developed urban landscape storm water run-on is 32.5 pCi/L; the gross alpha UTL for storm water containing sediments derived from Bandelier Tuff is 1490 pCi/L. One of the 2011 gross-alpha results is greater than both of these values, and the other result is between them.
- Radium-226 and radium-228—The radium-226 and radium-228 activity UTLs from developed urban landscape storm water run-on and for storm water containing sediments derived from Bandelier Tuff were not calculated because an insufficient number of detected values was available to permit calculation of the UTL values in the baseline metals background study. Thus, comparison to background storm water activity of radium-226 and radium-228 could not be made.
- PCB—The PCB UTL from developed urban landscape storm water run-on is 98 ng/L; the PCB UTL for storm water containing sediments derived from Bandelier Tuff is 11.7 ng/L. The PCB results from 2011 are both greater than these two values.

All the analytical results for these samples are reported in the 2011 Annual Report.

### 83.4 Inspections and Maintenance

RG-TA-53 recorded four storm events at S-SMA-6 during the 2012 season. These rain events triggered four post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 83-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Visual	COMP-20992	03-26-2012
Annual Erosion Evaluation	COMP-23460	03-26-2012
Storm Rain Event	BMP-26288	08-09-2012
Storm Rain Event	BMP-27093	08-29-2012
Storm Rain Event	BMP-28087	10-03-2012
Storm Rain Event	BMP-28639	10-19-2012

There were no maintenance activities conducted at S-SMA-6 in 2012.

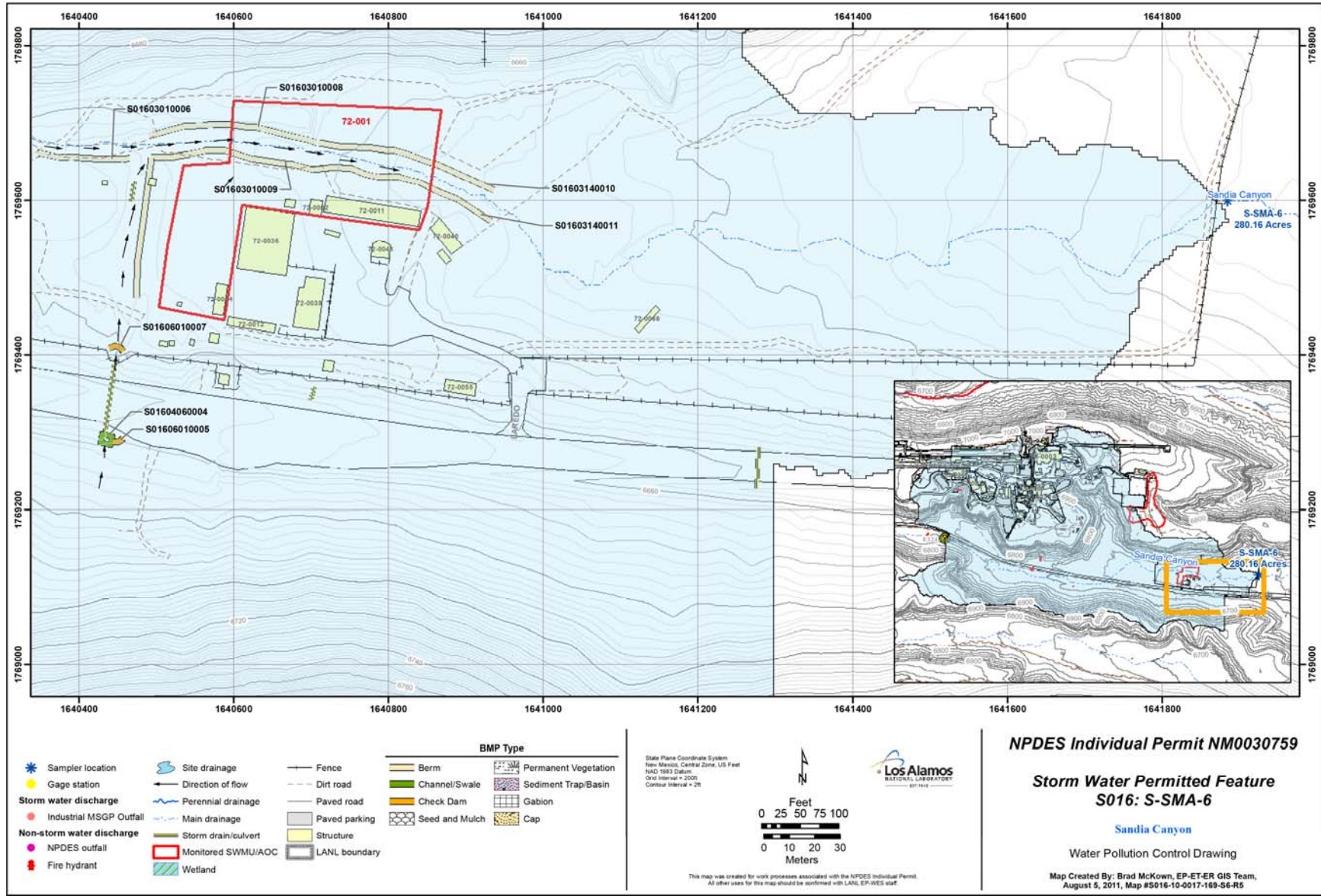
### 83.5 Compliance Status

The Site associated with S-SMA-6 is a high priority Site. Corrective action is to be certified complete within 3 yr of the effective date of the IP (i.e., November 2015).

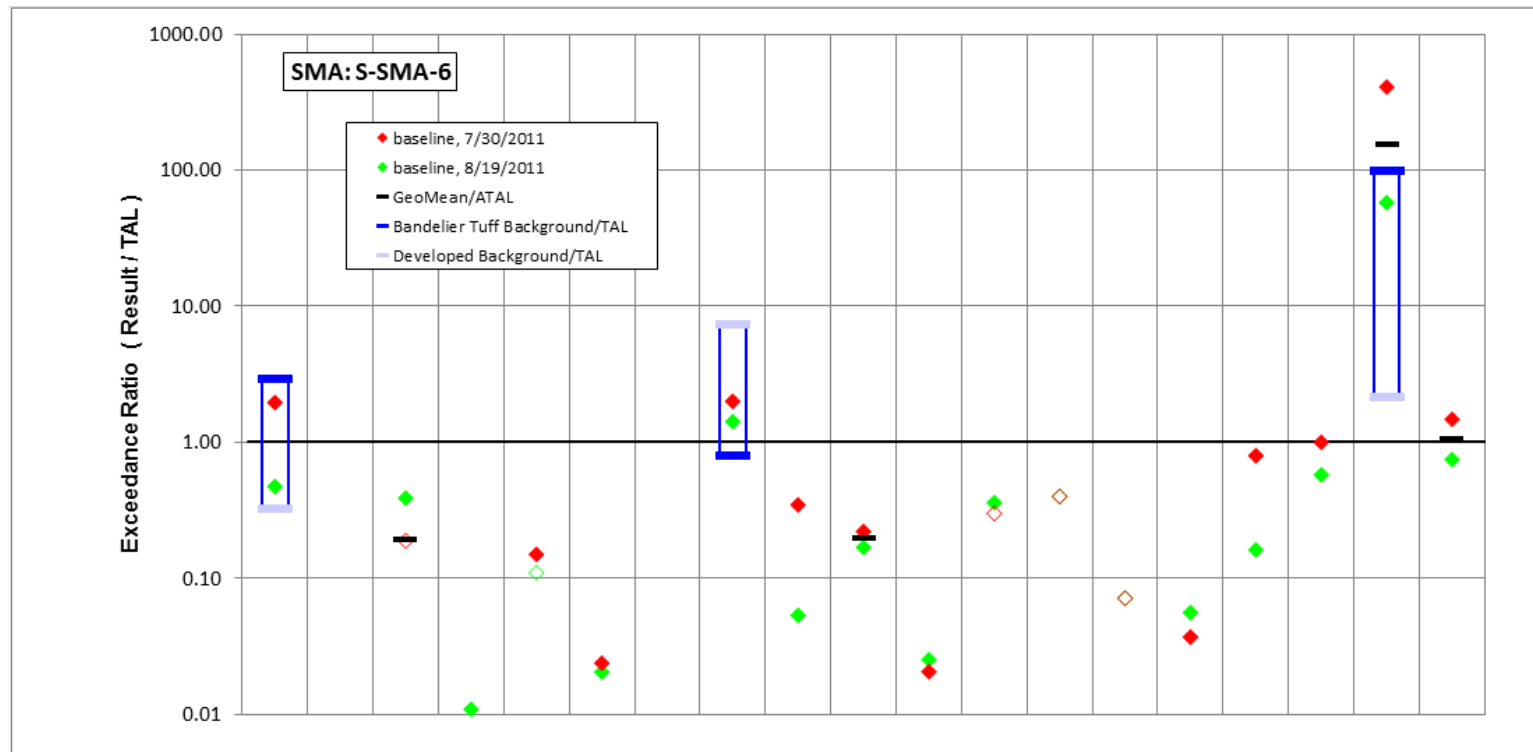
**Table 83-3 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
AOC 72-001	Corrective Action Initiated	Corrective Action Initiated	Initiated 11-02-2011





**Figure 83-1 S-SMA-6 location map**

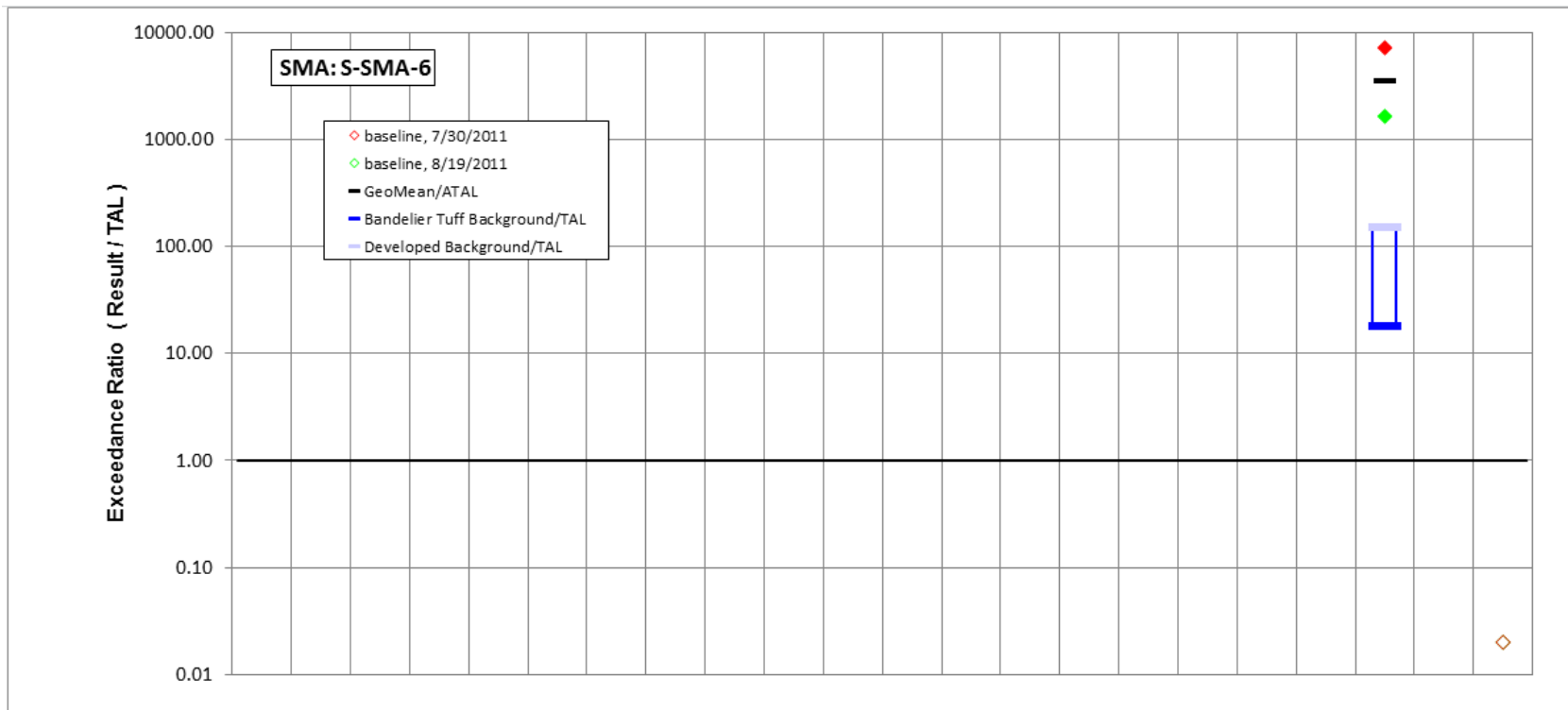


	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	Gross alpha	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
<b>8/19/2011 result</b>	355	1.9	3.5	54.5	<i>0.11</i>	4.3	3.9	<b>6.1</b>	0.91	0.13	4.3	1.8	0.2	0.45	5.6	6.8	0.0058	<b>867</b>	22.4
result / TAL	0.47	0.003	0.39	0.011	<i>0.11</i>	0.02	0.0039	<b>1.4</b>	0.054	0.17	0.025	0.36	0.4	0.071	0.056	0.16	0.58	<b>58</b>	0.75
<b>7/30/2011 result</b>	<b>1470</b>	2.5	1.7	22.7	0.15	5	3.6	<b>8.6</b>	5.9	0.17	3.5	1.5	0.2	0.45	3.7	33.5	0.01	<b>6140</b>	<b>44.3</b>
result / TAL	<b>2</b>	0.0039	0.19	0.0045	0.15	0.024	0.0036	<b>2</b>	0.35	0.22	0.021	0.3	0.4	0.071	0.037	0.8	1	<b>410</b>	<b>1.5</b>

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 83-2 Inorganic analytical results summary plot for S-SMA-6





	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	Total PCB	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	-	ATAL	-	ATAL
std value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200	-	6E-04	-	20
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
8/19/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4	-	1.05	-	0.4
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.002	-	1600	-	0.02
7/30/2011 result	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4	-	4.59	-	0.4
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.002	-	7200	-	0.02

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 83-3 Organic analytical results summary plot for S-SMA-6

## 84.0 CDB-SMA-0.15: SWMU 04-003(a) and AOC 04-004

### 84.1 Site Descriptions

Two historical industrial activity areas are associated with C001, CDB-SMA-0.15: Sites 04-003(a) and 04-004.

SWMU 04-003(a) is an outfall located approximately 15 ft southeast of former building 04-7 at former TA-04 (now TA-52). Former building 04-7 operated from 1948 to 1955 and housed a darkroom and photoprocessing laboratory that discharged to the outfall. Discharges to the outfall flowed to a trench southeast of former building 04-7 that eventually discharged into Cañada del Buey. Portions of the trench have since been covered by buildings 52-114 and 52-115 and an asphalt parking lot. Beta activity was detected in the darkroom in 1955, and portions of the floor were removed in an attempt to remediate the contamination. It is not known whether the drainlines were removed when former building 04-7 was dismantled in 1956.

AOC 04-004 is an area of potential soil contamination associated with the footprint of former building 04-7 at former TA-04 (now TA-52). The former building, which measured approximately 16 ft × 43 ft, housed a darkroom and photoprocessing laboratory. The building was used to develop film from 1948 to 1955 and was dismantled in 1956.

The project map (Figure 84-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 84.2 Control Measures

Run-on enters this SMA from the paved road, Puye Road, paralleling the northern boundary. There is also run-on from the paved access road on the western side of the SMA. Most of the run-on flows across the area via natural drainage channels. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 84-1).

**Table 84-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
C00101030012	Seed and Mulch - Hydromulch			X		B
C00102010002	Established Vegetation - Grasses and Shrubs			X		CB
C00103010013	Berms - Earthen		X		X	B
C00103060014	Berms - Straw Wattles	X			X	B
C00103120009	Berms - Rock	X			X	CB
C00106030003	Check Dam - Juniper Bales	X			X	CB
C00106030005	Check Dam - Juniper Bales		X		X	CB
C00106030006	Check Dam - Juniper Bales		X		X	CB
C00106030007	Check Dam - Juniper Bales		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 84.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at CDB-SMA-0.15. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 84.4 Inspections and Maintenance

RG200.5 recorded one storm event at CDB-SMA-0.15 during the 2012 season. These rain events triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 84-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23319	05-23-2012
Construction	COMP-26401	08-10-2012
Storm Rain Event	BMP-28713	10-23-2012

There were no maintenance activities conducted at CDB-SMA-0.15 in 2012.

### 84.5 Compliance Status

The Sites associated with CDB-SMA-0.15 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 84-3 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 04-003(a)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
AOC 04-004	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

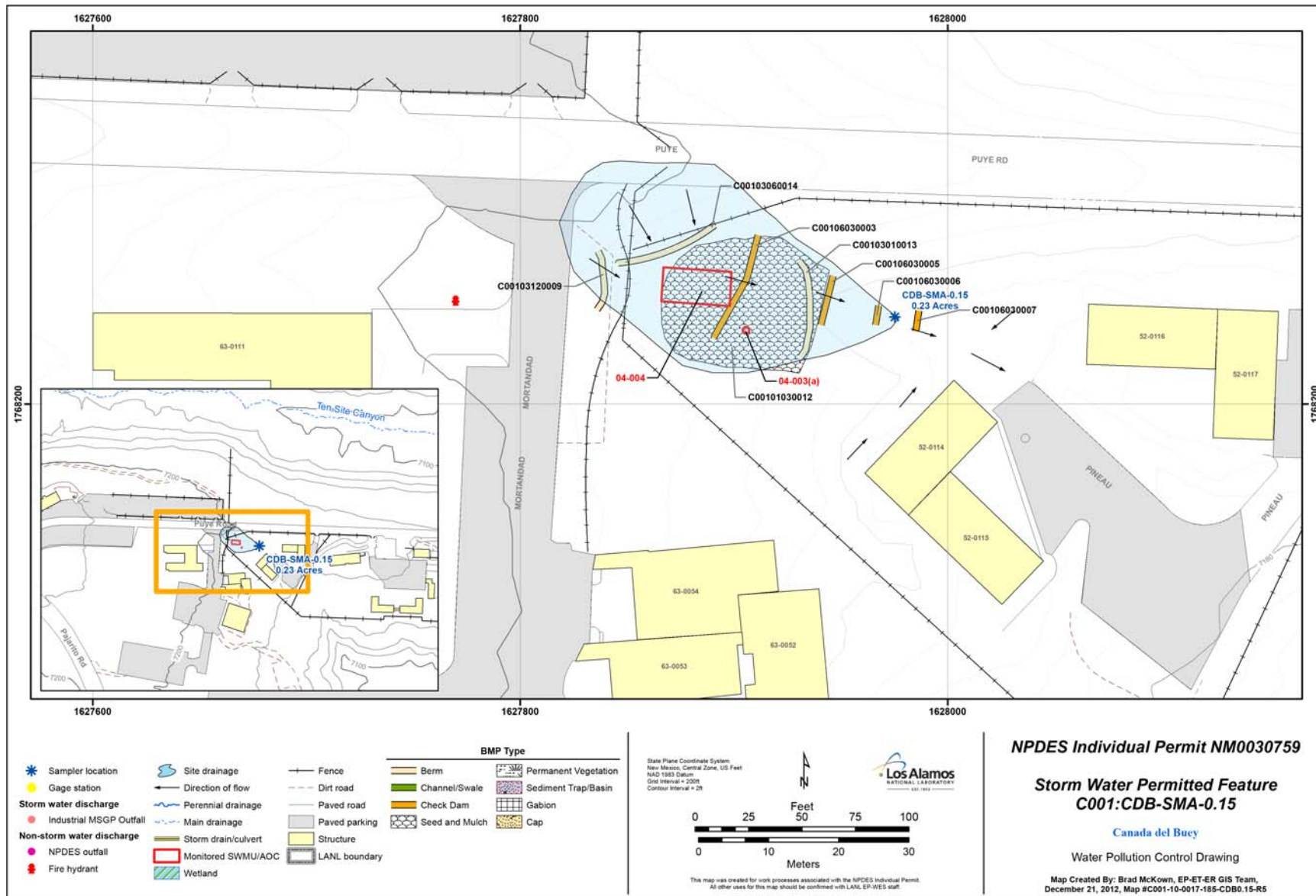


Figure 84-1 CDB-SMA-0.15 location map

## 85.0 CDB-SMA-0.25: SWMU 46-004(c2) and AOC 46-004(e2)

### 85.1 Site Descriptions

Two historical industrial activity areas are associated with C002, CDB-SMA-0.25: Sites 46-004(c2) and 46-004(e2).

SWMU 46-004(c2) is the formerly permitted outfall (EPA 03AS042) from an industrial drainline from building 46-01 that received effluent from floor drains in the north equipment room of building 46-01. The outfall consists of a 4-in.-diameter cast-iron pipe that discharged to a ditch approximately 50 ft northwest of building 46-01. Effluent from the floor drains discharged to the ditch. From the ditch, the effluent flowed to a storm drain culvert that discharged into Cañada del Buey. In 1997, the floor drains that discharged to the SWMU 46-004(c2) outfall were either removed from service or rerouted to the SWSC plant. The outfall was removed from the NPDES permit in March 1998. Building 46-0001 housed offices, two assembly bays, a machine shop, several laboratories for the assembly and checkout of electrical components, general laboratories, and a uranium-polishing area in support of the Rover Program. Potential contaminants associated with industrial materials historically managed at this Site are metals, petroleum products, and radionuclides.

AOC 46-004(e2) is the outfall from roof, floor, and sink drains in building 46-42 at TA-46. The outfall consists of a 4-in.-diameter pipe located approximately 50 ft northeast of building 46-42 at the head of a drainage ditch associated with SWMU 46-006(a). The outfall is located approximately 3 ft below the level of the asphalt pavement. Building 46-42 was constructed as an equipment checkout facility and contains electronics and robotics laboratories. In the mid-1990s, the floor and sink drains that discharged to this outfall either were removed from service or were rerouted to the sanitary sewer system. The outfall currently receives storm water from building 46-42 roof drains only.



The project map (Figure 85-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 85.2 Control Measures

The potential contributions to run-on at this SMA mainly originate on the paved and unpaved areas at the southern end of the area. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 85-1).

Enhanced controls were installed and certified on July 25, 2012, as part of corrective action. Photographs of the enhanced controls are available at <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/construction-certifications.php>.



**Table 85-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
C00202010005	Established Vegetation - Grasses and Shrubs			X		CB
C00203010013	Berms - Earthen		X		X	CB
C00203010017	Berms - Earthen		X		X	EC
C00203010018	Berms - Earthen		X		X	EC
C00204060009	Channel/Swale - Riprap	X		X		CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 85.3 Storm Water Monitoring

SWMU 46-004(c2) is monitored within CDB-SMA-0.25. Following the installation of baseline control measures, a baseline storm water sample was collected on September 1, 2011 (Figures 85-2 and 85-3). Analytical results from this sample yielded two TAL exceedances:

- Aluminum concentration of 2310 µg/L (MTAL is 750 µg/L),
- Copper concentration of 11.2 µg/L (MTAL is 4.3 µg/L), and
- PCB concentration of 6 ng/L (ATAL is 0.6 ng/L).

These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

*SWMU 46-004(c2)*: Potential contaminants associated with industrial materials historically managed at this Site are metals, petroleum products, and radionuclides.

- Aluminum—Aluminum was not detected above BV in soil samples collected during the 2010 Consent Order investigation.
- Copper—The maximum detected copper concentration in soil samples collected during the 2010 Consent Order investigation was 3 times BV.
- PCBs—PCBs were detected in 2010 Consent Order samples with a maximum concentration 12% of the residential SSL.

In summary, aluminum is not known to be associated with industrial materials historically managed at the Site and was not detected above BV. Based on site history and previous sampling results, the Site is an unlikely source of aluminum above MTAL in storm water. Copper may have been present in industrial materials historically managed at the Site, and copper was detected above BV. Based on site history and previous sampling results, the Site may be a source of copper above MTAL in storm water. PCBs are not known to be associated with industrial materials historically managed at the Site and were detected only at low concentrations well below residential SSLs. Based on site history and previous sampling results, the Site is an unlikely source of PCBs above ATAL in storm water.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figures 85-2 and 85-3. UTLs developed for urban settings were derived from runoff from developed landscapes on the Pajarito Plateau, including buildings, parking lots, roads, and associated features, and are labeled “Developed Background” in Figures 85-2 and 85-3.

Monitoring location CDB-SMA-0.25 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as from landscape consisting of Bandelier Tuff sediment. Metals including copper and aluminum are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff. PCBs are associated with building materials including paint, caulking, asphalt, solvents, transformers, and cutting oils.

- Aluminum—The aluminum UTL from developed urban landscape storm water run-on is 245 µg/L; the aluminum UTL for storm water containing sediments derived from Bandelier Tuff is 2210 µg/L. The aluminum result from 2011 is greater than both of these values.
- Copper—The copper UTL from developed urban landscape storm water run-on is 32.3 µg/L; the copper UTL for storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L. The copper result from 2011 is between these two values.
- PCB—The PCB UTL from developed urban landscape storm water run-on is 98 ng/L; the PCB UTL for storm water containing sediments derived from Bandelier Tuff is 11.7 ng/L. The PCB result from 2011 is less than both of these values.

All the analytical results for these samples are reported in the 2011 Annual Report.

#### **85.4 Inspections and Maintenance**

RG245.5 recorded one storm event at CDB-SMA-0.25 during the 2012 season. These rain events triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 85-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Visual Inspection	COMP-21611	03-26-2012
Annual Erosion Evaluation	COMP-23320	03-26-2012
Construction	COMP-23496	05-16-2012
Enhanced Control Measure Verification	BMP-23590	05-31-2012
Storm Rain Event	BMP-26894	08-29-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 85-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-23743	Removed trash and debris from both areas of riprap C00204060009.	06-12-2012	12 day(s)	Maintenance conducted in timely manner.
BMP-27198	Installed seed and mulch over minimal vegetation areas noted near outfalls 46-004(c2) and 46-004(e2).	09-05-2012	7 day(s)	Maintenance conducted in timely manner.

**85.5 Compliance Status**

The Sites associated with CDB-SMA-0.25 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 85-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 46-004(c2)	Corrective Action Initiated	Enhanced Control Corrective Action Monitoring	Initiated 07-20-2012
AOC 46-004(e2)	Corrective Action Initiated	Enhanced Control Corrective Action Monitoring	Initiated 07-20-2012

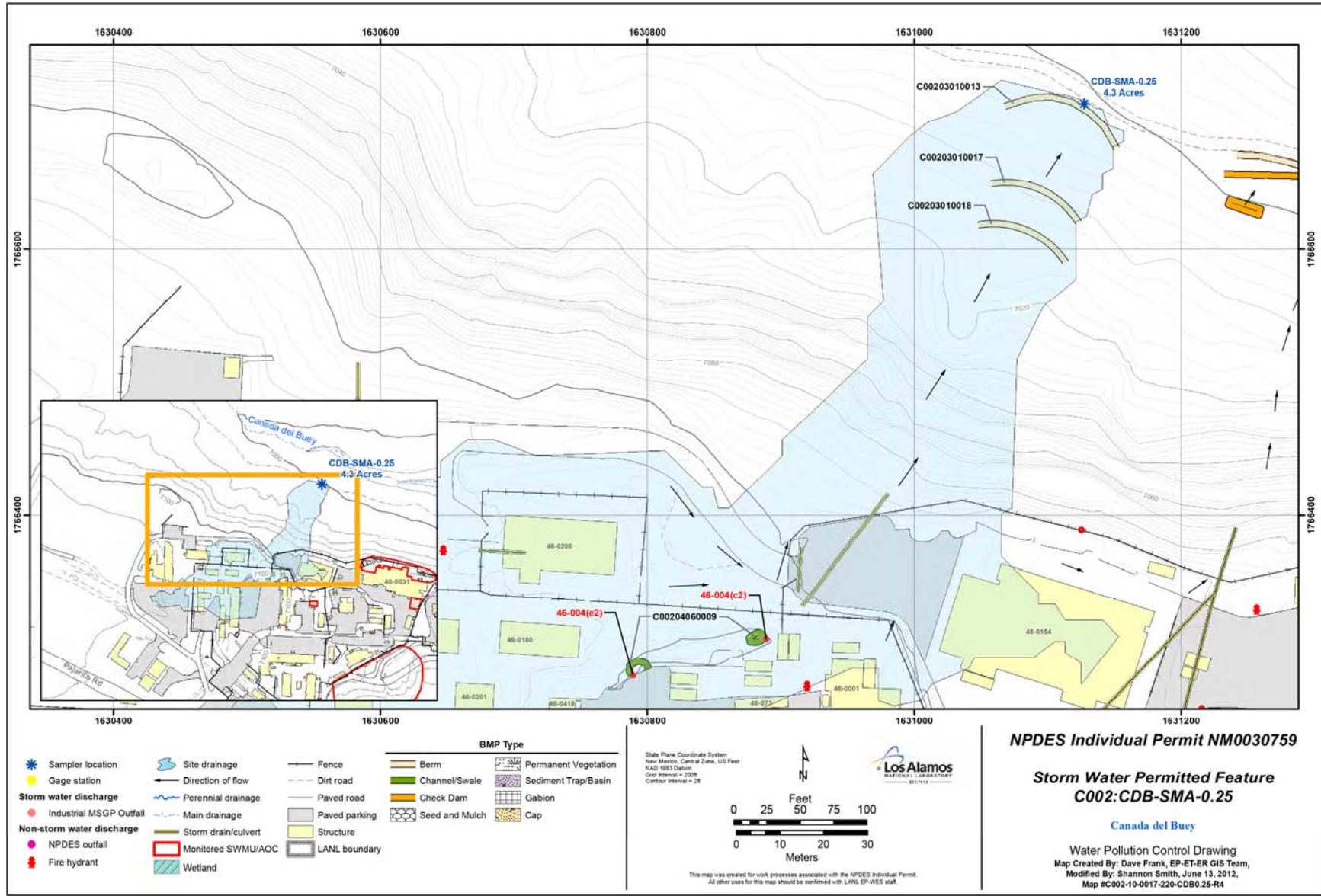
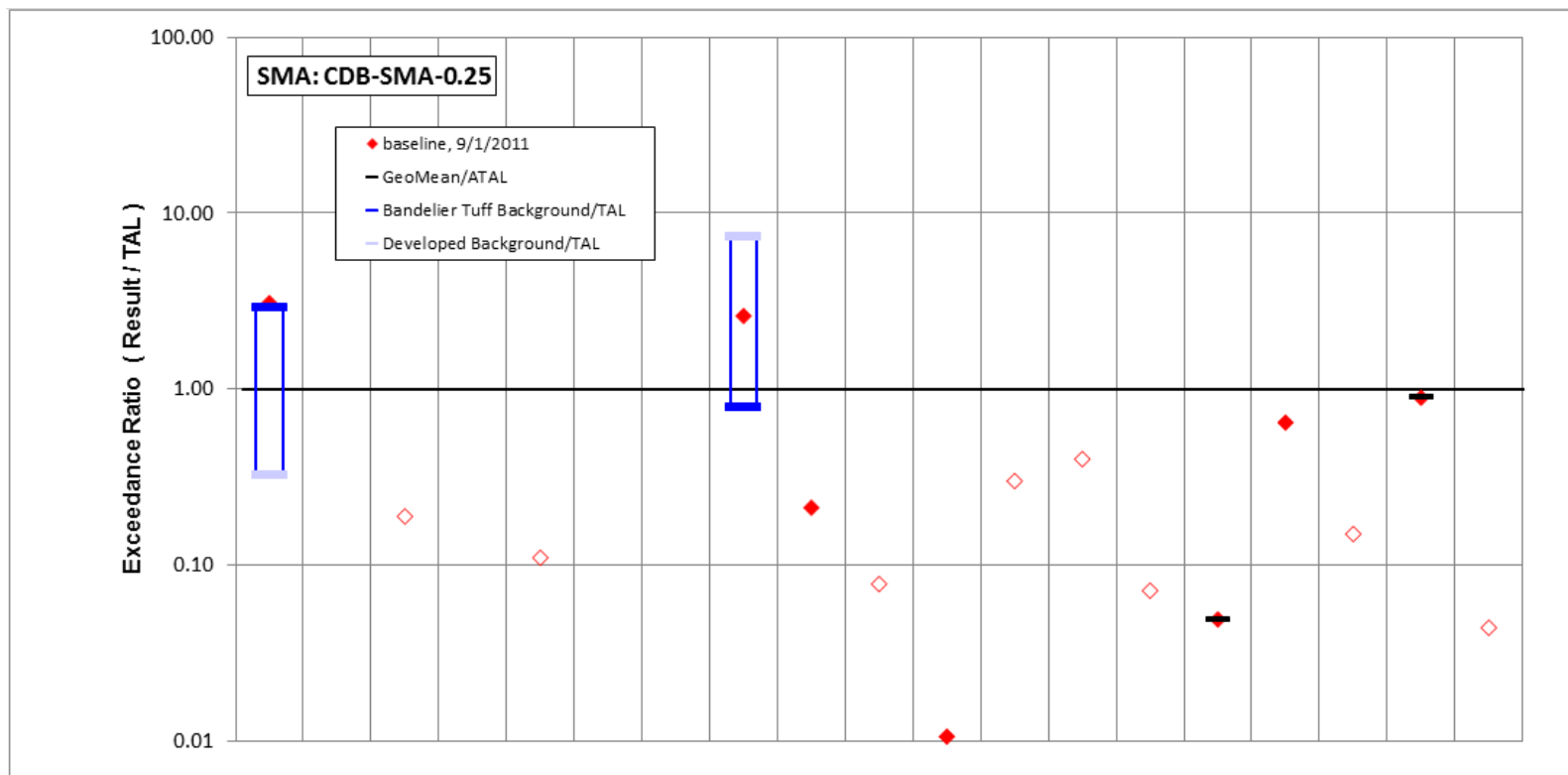


Figure 85-1 CDB-SMA-0.25 location map

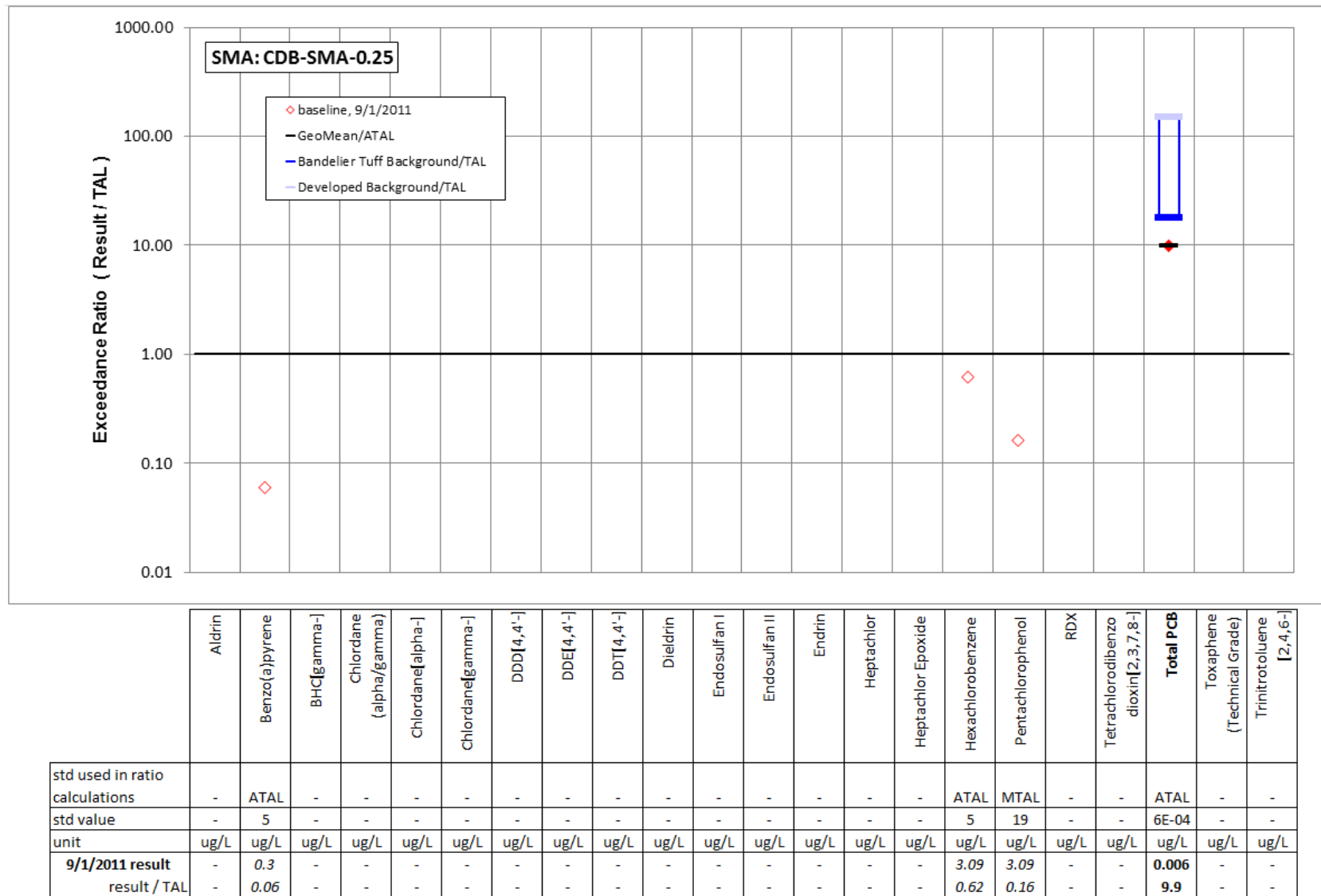


	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	Gross alpha	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
9/1/2011 result	<b>2310</b>	3.8	1.7	16.6	<i>0.11</i>	2	2.5	<b>11.2</b>	3.6	<i>0.06</i>	1.8	1.5	0.2	0.45	4.9	27.1	<i>0.002</i>	13.4	1.32
result / TAL	<b>3.1</b>	0.0059	0.19	0.0033	<i>0.11</i>	<i>0.01</i>	0.0025	<b>2.6</b>	0.21	<i>0.078</i>	0.011	0.3	0.4	0.071	0.049	0.65	0.15	0.89	0.044

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 85-2 Inorganic analytical results summary plot for CDB-SMA-0.25





Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 85-3 Organic analytical results summary plot for CDB-SMA-0.25

**86.0 CDB-SMA-0.55: SWMUs 46-004(g), 46-004(m), 46-004(s), and 46-006(f)**

**86.1 Site Descriptions**

Four historical industrial activity areas are associated with C003, CDB-SMA-0.55: Sites 46-004(g), 46-004(m), 46-004(s), and 46-006(f).

SWMU 46-004(g) consists of an area of potential surface soil contamination associated with exhaust emissions from stacks on building 46-1 and an inactive outfall from an industrial drainline in building 46-1 at TA-46. Work in building 46-1 that generated exhaust emissions involved the baking and high-temperature testing of fuel rods. The outfall component of SWMU 46-004(g) consists of an inactive 12-in.-diameter vitrified clay pipe (VCP) industrial drain that received effluent from floor drains and roof drains within the central portion of building 46-1 and discharged into Cañada del Buey north of building 46-154. Building 46-1 housed offices, two assembly bays, a machine shop, several laboratories for the assembly and checkout of electrical components, general laboratories, and a uranium-polishing area. In 1996 and 1997, the floor drains that discharged to this outfall either were removed from service or were rerouted to the SWSC plant. Roof drains from building 46-1 that discharged to this outfall were rerouted to the storm water drain system in 1996.

SWMU 46-004(m) is a former NPDES-permitted outfall (04A013) located approximately 60 ft north of building 46-30 at TA-46. The outfall protrudes from a 10-ft-deep bank on the hillside north of building 46-30. The outfall discharged effluent from an industrial drainline in building 46-30 to a ditch at the foot of the bank. The ditch channeled wastewater to a storm drain culvert that discharges into Cañada del Buey. Engineering drawings show this industrial drainline received effluent from the roof drains, laboratory sinks, and floor drains in building 46-30. Building 46-30 was constructed as a hydraulics laboratory and contained a high-bay area with a crane, an actuator test area, and a small machine shop. In December 1995, the outfall was removed from the NPDES permit. Before the outfall was removed from the NPDES permit, all discharges to the outfall from building 46-30 ceased.



CDB-SMA-0.55, Rock Check Dam, C00306010013 (photo ID 8503-3)

SWMU 46-004(s) is an outfall located approximately 20 ft south of building 46-1 at TA-46. The outfall consists of a 4-in.-diameter cast-iron pipe that discharged to a drainage ditch (SWMU 46-007) on the south side of building 46-1. The drainage ditch leads to a storm drain culvert that discharges into Cañada del Buey. The outfall received effluent from floor and roof drains of the south high bay in building 46-1. Building 46-1 housed offices, two assembly bays, a machine shop, several laboratories for the assembly and checkout of electrical components, general laboratories,

and a uranium-polishing area. In 1995, all floor drains in the south high bay of building 46-1 either were plugged or were rerouted to the SWSC plant. Currently, roof drains from the south high bay discharge to the storm drainage system and/or daylight near building 46-1.

SWMU 46-006(f) is a storage shed (building 46-36) located approximately 50 ft east of building 46-1 at TA-46. The 20-ft × 30-ft metal storage shed was constructed in 1955. The floor of the storage shed is paved and sits approximately 6 to 8 in. belowgrade. The area surrounding the storage shed also has been a storage area as well as a staging area for equipment and materials awaiting disposal and an

unloading area for new equipment. The areas on the west and south sides of the storage shed are paved; the areas on the north and east are unpaved. Stored materials may have included oils (possibly containing PCBs), alkali metals, asbestos-containing products, beryllium alloys, potassium dichromate, lead bricks, lead shot, and mercury. Because the floor of building 46-36 is belowgrade, frequent flooding of the storage shed occurs during the rainy season. The surrounding area slopes north to a storm drain culvert that discharges into Cañada del Buey.

The project map (Figure 86-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 86.2 Control Measures

Most of the run-on to this SMA originates from the paved areas in the southern portion of the SMA. Planned controls are to fortify runoff controls in this area. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 86-1).

**Table 86-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
C00302010008	Established Vegetation - Grasses and Shrubs			X		CB
C00303010011	Berms - Earthen		X		X	CB
C00306010006	Check Dam - Rock	X			X	CB
C00306010009	Check Dam - Rock		X		X	CB
C00306010013	Check Dam - Rock	X			X	CB
C00306010015	Check Dam - Rock	X			X	CB
C00306010016	Check Dam - Rock	X			X	CB
C00306010017	Check Dam - Rock	X			X	CB
C00306010018	Check Dam - Rock	X			X	CB
C00306010019	Check Dam - Rock	X			X	CB
C00306010020	Check Dam - Rock	X			X	CB
C00306020012	Check Dam - Log		X		X	CB
C00306020014	Check Dam - Log		X		X	CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

### 86.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at CDB-SMA-0.55. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 86.4 Inspections and Maintenance

RG245.5 recorded one storm event at CDB-SMA-0.55 during the 2012 season. These rain events triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 86-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
NMED Audit	NMED Audit	02-21-2012
Annual Erosion Evaluation	COMP-23321	05-30-2012
Storm Rain Event	BMP-26895	08-30-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 86-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-22608	Clean out sediment behind rock check dam C00306010017.	04-16-2012	55 day(s)	Maintenance conducted as soon as practicable.
BMP-27281	Repaired berm C00303010011, (berm, spillway, seed, matting).	09-13-2012	14 day(s)	Maintenance conducted in timely manner.

### 86.5 Compliance Status

The Sites associated with CDB-SMA-0.55 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 86-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 46-004(g)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 46-004(m)	Baseline Monitoring	Baseline Monitoring Extended	NMED, July 13, 2012, "Approval of Request for Certificates of Completion for Six Solid Waste Management Units and One Area of Concern in the Upper Cañada del Buey Aggregate Area, Los Alamos National Laboratory"
SWMU 46-004(s)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 46-006(f)	Baseline Monitoring	Baseline Monitoring Extended	No Comment



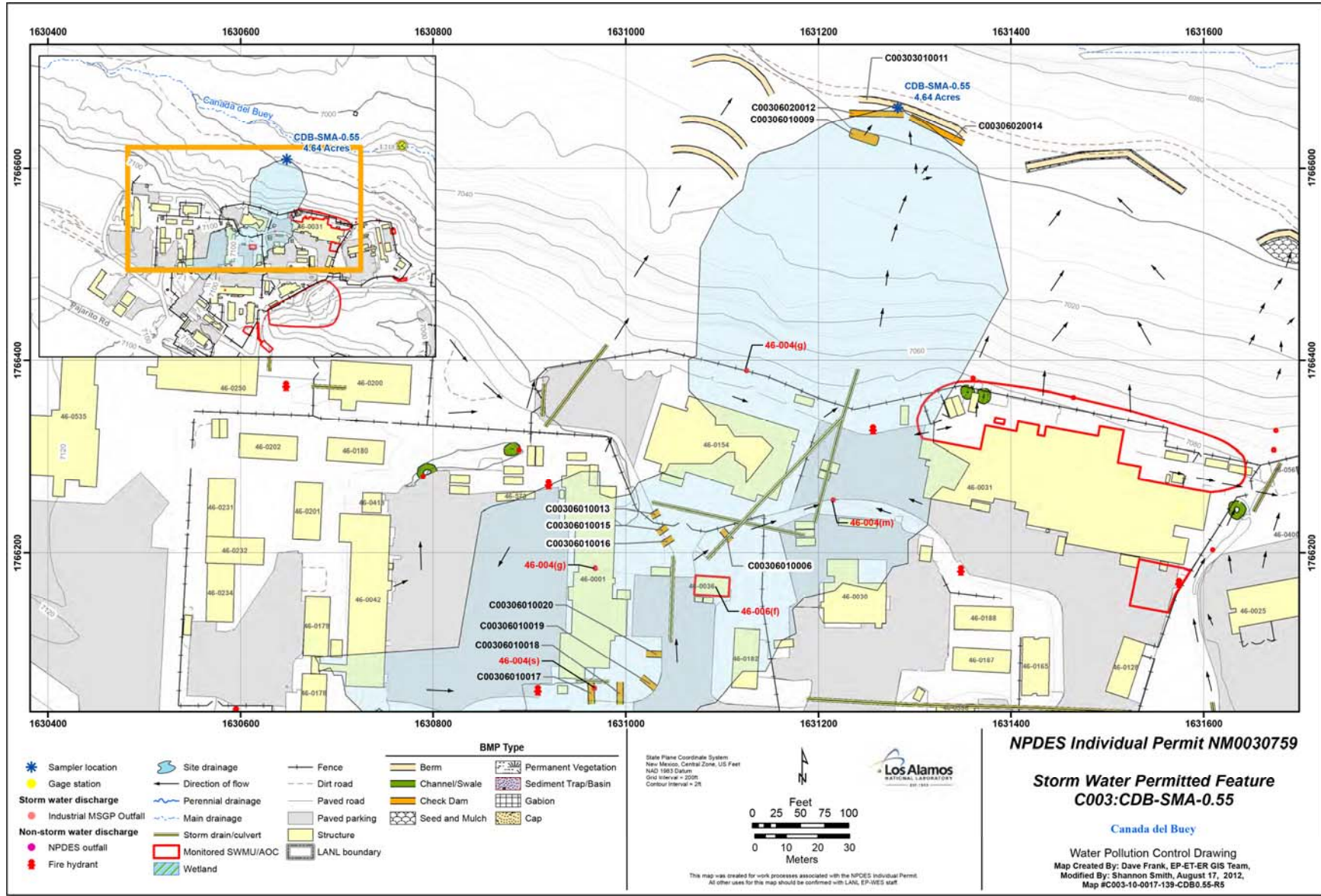


Figure 86-1 CDB-SMA-0.55 location map



**87.0 CDB-SMA-1: SWMUs 46-003(c), 46-004(d2), 46-004(f), 46-004(t), 46-004(w), 46-008(g), and 46-009(a) and AOC C-46-001**

**87.1 Site Descriptions**

Eight historical industrial activity areas are associated with C004, CDB-SMA-1: Sites 46-003(c), 46-004(d2), 46-004(f), 46-004(t), 46-004(w), 46-008(g), 46-009(a), and C-46-001.

SWMU 46-003(c) is a septic system consisting of a septic tank (structure 46-49), a distribution box (structure 46-50), associated drainline, a drain field, and an outfall. This septic system served the restroom facilities, floor drains, roof drains, sinks, and acid sinks in building 46-24, which housed offices, a machine shop, electrical laboratories, and chemical laboratories where fuel rods were handled. Septic tank 46-49 is located southeast of building 46-76, beneath an asphalt road outside the TA-46 security fence. In 1958, an acid dry well located in room B22 of building 46-24 was connected into this system but drained to the septic tank for less than 1 yr. The drain field associated with this septic system was removed from service sometime before 1968, and septic tank 46-49 was rerouted to the drain field associated with SWMU 46-003(f). In the 1970s, sanitary waste drainlines that previously discharged to septic tank 46-49 were rerouted to the SWMU 46-002 surface impoundment system, and septic tank 46-49 was reportedly removed from service, emptied, filled, and left in place. However, no evidence of septic tank 46-49 was found during the geophysical survey conducted during the 2010 investigation, indicating the tank has been removed. Potential contaminants associated with industrial materials historically managed at this Site are organic solvents, petroleum products, metals, and radionuclides.

SWMU 46-004(d2) consists of potential soil contamination associated with laboratory stack emissions from building 46-24 at TA-46 in the early 1960s. In 1960 and 1961, experiments conducted in building 46-24 used beryllium and beryllium oxide. The potential contaminant associated with industrial materials historically managed at this Site is beryllium.

SWMU 46-004(f) is an inactive outfall from an industrial drainline that served rooms 101 through 134 of building 46-24 at TA-46. The outfall consists of a 6-in.-diameter VCP that received discharges from a sump, acid sink, several floor and sink drains, and cooling-water system. The outfall pipe discharged to a drain approximately 50 ft east of building 46-24. This drain is part of a network of drains that discharge to SWSC Canyon at former NPDES-permitted Outfall 04A018. Building 46-24 housed offices, a machine shop, electrical laboratories, and chemical laboratories where fuel rods were handled. Before the outfall was removed from the NPDES permit, all discharges to the outfall from building 46-24 ceased. Potential contaminants associated with industrial materials historically managed at this Site are metals, petroleum products, and radionuclides.

SWMU 46-004(t) is a formerly permitted outfall (EPA 04A014) located approximately 60 ft southeast of building 46-76 at TA-46. The outfall is a 4-in.-diameter VCP drainline that received effluent from sink drains in rooms 101 and 102, from all floor drains in room 104, and from the high bay in building 46-88. The drainline discharged at a point approximately 250 ft northeast of building 46-88 on the west side of SWSC Road. Effluent from the outfall flowed to a storm drain culvert under the road and discharged to SWSC Canyon. Building 46-88 housed a structural laboratory for testing pressure vessels associated with the Rover Program. Later, the building was used for process chemistry work to isolate nonradioactive isotopes of carbon, oxygen, and nitrogen. The outfall was removed from the NPDES permit in July 1995. All discharges from building 46-88 ceased before the outfall was removed from the NPDES permit. Potential contaminants associated with industrial materials historically managed at this Site are metals and organic chemicals.

SWMU 46-004(w) is a former NPDES-permitted outfall located approximately 70 ft south of building 46-24 at TA-46. The outfall is a 2-in.-diameter cast-iron pipe that discharged to a drain south of building 46-24, near the northeast corner of a laser laboratory (building 46-76). The outfall served a sink drain in building 46-59. SWMU 46-004(w) also received effluent from the SWMU 46-004(r) outfall and was part of a network of drains that discharged to SWSC Canyon at former NPDES-permitted outfall 04A018. Building 46-59 was used for hydraulic and structural testing of components in support of the Rover Program. The outfall was removed from the NPDES permit in December 1995. Before the outfall was removed from the NPDES permit, all discharges from building 46-59 to the outfall ceased. The SWMU 46-004(w) outfall overlaps the location of the SWMU 46-004(r) outfall. Potential contaminants associated with industrial materials historically managed at this Site are metals, petroleum products, and radionuclides.

SWMU 46-008(g) is an unpaved storage area located south of a laser laboratory (building 46-76) at TA-46. In 1990, 20 drums containing dielectric oil were reported to be stored directly on the ground at this location. The site is a level area bisected by a drainage that flows east into SWSC Canyon through a storm drain culvert. Potential contaminants associated with industrial materials historically managed at this Site are petroleum products and PCBs.



CDB-SMA-1, Rock Check Dam, C00406010010 (photo ID 24704-9)

SWMU 46-009(a) is a surface disposal area located at the head of SWSC Canyon near the southeastern corner of TA-46. The surface disposal area covers approximately 5000 yd<sup>2</sup>, extending from the canyon rim to the floor of SWSC Canyon. The disposal area contains a variety of materials, including asphalt, concrete, plywood, pipe, and other construction materials. The dates material was disposed of at the site are not known. Aerial photographs of TA-46 taken in 1958 show the presence of the surface disposal area, confirming that disposal had started by at least 1958. Potential contaminants associated with industrial materials historically managed at this Site are metals, PCBs, and radionuclides.

AOC C-46-001 is the location of a one-time spill of mercury in the vicinity of building 46-75 at TA-46. On July 22, 1975, 250–500 g (0.55–1.1 lb) of mercury spilled on the ground near building 46-75. The spill was cleaned up shortly after it occurred. The memorandum documenting the spill does not provide the precise location of where the spill occurred at building 46-75; however, aerial photos show the entire area surrounding building 46-75 was paved at the time of the spill. The nature and extent have been defined for all chemicals and radionuclides detected at AOC C-46-001. A human health risk assessment was not performed for AOC C-46-001 because no chemicals of potential concern (COPCs) were identified for the site. No potential unacceptable risks from COPCs exist for the industrial, construction worker, and residential scenarios. An ecological risk assessment was not performed for AOC C-46-001 because no COPCs were identified for the site. No potential risks from COPCs to ecological receptors exist. No further investigation or remediation activities are warranted at SWMU 46-004(m); NMED issued a COC without controls in July 2012. The potential contaminant associated with industrial materials historically managed at this Site is mercury.

The project map (Figure 87-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 87.2 Control Measures

Most of the run-on contributions to the SMA originate from the paved areas in the developed portion of the SMA. An engineered storm water system routes water through most of the SWMUs. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 87-1).

Enhanced controls were installed and certified on August 27, 2012 as part of corrective action. Photographs of the enhanced controls are available at <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/construction-certifications.php>.

**Table 87-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
C00402010001	Established Vegetation - Grasses and Shrubs			X		CB
C00402020002	Established Vegetation - Forested/Needle Cast			X		CB
C00402030007	Established Vegetation - Vegetative Buffer Strip			X		CB
C00403010014	Berms - Earthen		X		X	EC
C00404060006	Channel/Swale - Riprap	X		X		CB
C00404060008	Channel/Swale - Riprap		X		X	CB
C00404060009	Channel/Swale - Riprap	X			X	CB
C00406010004	Check Dam - Rock		X		X	CB
C00406010010	Check Dam - Rock	X			X	CB
C00406010011	Check Dam - Rock	X			X	CB
C00406010012	Check Dam - Rock	X			X	CB
C00406010013	Check Dam - Rock		X		X	CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

### 87.3 Storm Water Monitoring

SWMUs 46-003(c), 46-004(d2), 46-004(f), 46-004(t), 46-004(w), 46-008(g), and 46-009(a) and AOC C-46-001 are monitored within CDB-SMA-1. Following the installation of baseline control measures, a baseline storm water sample was collected on August 21, 2011 (Figures 87-2 and 87-3). Analytical results from this sample yielded four TAL exceedances:

- Aluminum concentration of 1120 µg/L (MTAL is 750 µg/L),
- Copper concentration of 8 µg/L (MTAL is 4.3 µg/L),
- Gross-alpha activity of 15.2 pCi/L (ATAL is 15 pCi/L), and
- PCB concentration of 20 ng/L (ATAL is 0.6 ng/L).

These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

*SWMU 46-003(c)*: Potential contaminants associated with industrial materials historically managed at this Site are organic solvents, petroleum products, metals, and radionuclides.

- Aluminum—Aluminum was not detected above BV in soil samples collected during the 2010 Consent Order investigation.
- Copper—Copper was detected at a concentration 1.5 times BV in one sample collected during the 2010 Consent Order investigation.
- PCBs—PCBs were detected in 2010 Consent Order samples with a maximum concentration 0.07% of the residential SSL.
- Gross alpha—Alpha-emitting radionuclide uranium-235/236 was detected at an activity 1.7 times BV in one sample collected during the 2010 Consent Order investigation.

Aluminum and copper may be associated with industrial materials historically managed at the Site, but aluminum was not detected above BV, and copper was detected at concentrations slightly above BV. Based on previous sampling results, the Site is an unlikely source of aluminum and copper above MTALs in storm water. PCBs may be associated with industrial materials historically managed at the Site but were detected at low concentrations well below residential SSLs. Based on previous sampling results, the Site is an unlikely source of PCBs above ATAL in storm water. Uranium, which has alpha-emitting isotopes, may be associated with industrial materials historically managed at this Site and was detected slightly above BV. Uranium isotopes, however, are excluded from the definition of adjusted gross-alpha radioactivity. No other alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Based on site history and previous sampling results, the Site is an unlikely source of adjusted gross alpha above ATAL in storm water.

*SWMU 46-004(d2)*: The potential contaminant associated with industrial materials historically managed at this Site is beryllium.

- Aluminum—Aluminum was not detected above BV in soil samples collected during the 2010 Consent Order investigation.
- Copper—Copper was detected at a maximum concentration 5 times BV in soil samples collected during the 2010 Consent Order investigation.
- PCBs—PCBs were detected with a maximum concentration 31% of the residential SSL in 2010 Consent Order samples.
- Gross alpha—Alpha-emitting radionuclides plutonium-238 and uranium-234 were detected at maximum activities 1.4 times and 1.02 times FVs/BVs, respectively, in soil samples collected during the 2010 Consent Order investigation.

In summary, aluminum is not known to be associated with industrial materials historically managed at the Site; aluminum was not detected above BV. Based on site history and previous sampling results, the Site is an unlikely source of aluminum above MTAL in storm water. Copper is not known to be associated with industrial materials historically managed at the Site; but copper was detected above BV. Based on site history, the Site may be a source of copper above MTAL in storm water. PCBs are not known to be associated with industrial materials historically managed at the Site and were detected at low

concentrations well below residential SSLs. Based on site history and previous sampling results, the Site is an unlikely source of PCBs above ATAL in storm water. Plutonium and uranium, which have alpha-emitting isotopes, are not known to be associated with industrial materials historically managed at this Site and were detected slightly above BVs/FVs. Plutonium and uranium isotopes, however, are excluded from the definition of adjusted gross-alpha radioactivity. No other alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Based on site history and previous sampling results, the Site is an unlikely source of adjusted gross alpha above ATAL in storm water.

*SWMU 46-004(f)*: Potential contaminants associated with industrial materials historically managed at this Site are metals, petroleum products, and radionuclides.

- Aluminum—Aluminum was not detected above BV in soil samples collected during the 2010 Consent Order investigation.
- Copper—Copper was not detected above BV in soil samples collected during the 2010 Consent Order investigation.
- PCBs—PCBs were detected at a maximum concentration 5% of the residential SSL in 2010 Consent Order samples.
- Gross alpha—Alpha-emitting radionuclides were not detected or not detected above BVs/FVs in soil samples collected during the 2010 Consent Order investigation.

In summary, aluminum and copper may be associated with industrial materials historically managed at the Site but were not detected above BVs. Based on previous sampling results, the Site is an unlikely source of aluminum and copper above MTALs in storm water. PCBs may be associated with industrial materials historically managed at the Site but were detected at low concentrations well below residential SSLs. Based on previous sampling results, the Site is an unlikely source of PCBs above ATAL in storm water. Uranium may be associated with industrial materials historically managed at the Site but uranium isotopes were not detected above BVs and are excluded from the definition of adjusted gross-alpha radioactivity. No other alpha-emitting isotopes are known to be associated with industrial materials historically managed at this Site and none were detected above BVs/FVs. Based on site history and previous sampling results, the Site is an unlikely source of adjusted gross alpha above ATAL in storm water.

*SWMU 46-004(t)*: Potential contaminants associated with industrial materials historically managed at this Site are metals and organic chemicals.

- Aluminum—Aluminum was detected at a maximum concentration 1.4 times BV in soil samples collected during the 2010 Consent Order investigation.
- Copper—Copper was detected at a maximum concentration 2.3 times BV in soil samples collected during the 2010 Consent Order investigation.
- PCBs—PCBs were detected at a maximum concentration 5% of the residential SSL in 2010 Consent Order samples.
- Gross alpha—Alpha-emitting radionuclide uranium-235/236 was detected at an activity 1.2 times BV in one sample collected during the 2010 Consent Order investigation.

In summary, aluminum and copper are not known to be associated with industrial materials historically managed at the Site; aluminum and copper were detected at concentrations slightly above BVs. Based on site history and previous sampling results, the Site is an unlikely source of aluminum above MTALs in



storm water. Copper is not known to be associated with industrial materials historically managed at the Site; however, copper was detected above BV. Based on previous sampling results, the Site may be a source of copper above MTAL in storm water. PCBs are not known to be associated with industrial materials historically managed at the Site and were detected at low concentrations well below residential SSLs. Based on site history and previous sampling results, the Site is an unlikely source of PCBs above ATAL in storm water. Uranium, which has alpha-emitting isotopes, is not known to be associated with industrial materials historically managed at this Site and was detected slightly above BV. Uranium isotopes, however, are excluded from the definition of adjusted gross-alpha radioactivity. No other alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Based on site history and previous sampling results, the Site is an unlikely source of adjusted gross alpha above ATAL in storm water.

**SWMU 46-004(w):** Potential contaminants associated with industrial materials historically managed at this Site are metals, petroleum products, and radionuclides.

- Aluminum—Aluminum was not detected above BV in soil samples collected during the 2010 Consent Order investigation.
- Copper—Copper was detected at a maximum concentration 7.4 times BV in soil samples collected during the 2010 Consent Order investigation.
- PCBs—PCBs were not detected in 2010 Consent Order samples.
- Gross alpha—Alpha-emitting radionuclides were not detected or not detected above BVs/FVs in soil samples collected during the 2010 Consent Order investigation.



CDB-SMA-1, Rip Rap,  
C00404060009 (photo ID 11025-9)

In summary, aluminum is not known to be associated with industrial materials historically managed at the Site and was not detected above BV. Based on site history and previous sampling results, the Site is an unlikely source of aluminum above MTAL in storm water. Copper is not known to be associated with industrial materials historically managed at the Site; however, copper was detected above BV. Based on previous sampling results, the Site may be a source of copper above MTAL in storm water. PCBs may be associated with industrial materials historically managed at the Site

but were not detected. Based on previous sampling results, the Site is an unlikely source of PCBs above ATAL in storm water. Based on site history and previous sampling results, the Site is an unlikely source of adjusted gross alpha above ATAL in storm water. No alpha-emitting isotopes are known to be associated with industrial materials historically managed at this Site and none were detected above BVs/FVs.

**SWMU 46-008(g):** Potential contaminants associated with industrial materials historically managed at this Site are petroleum products and PCBs.

- Aluminum—Aluminum was not detected above BV in soil samples collected during the 2010 Consent Order investigation.
- Copper—Copper was detected at a maximum concentration 4.7 times BV in soil samples collected during the 2010 Consent Order investigation.

- PCBs—PCBs were detected at a maximum concentration 95% of the residential SSL in 2010 Consent Order samples.
- Gross alpha—Alpha-emitting radionuclides were not detected or not detected above BVs/FVs in soil samples collected during the 2010 Consent Order investigation.

Aluminum is not known to be associated with industrial materials historically managed at the Site and was not detected above BV. Based on site history and previous sampling results, the Site is an unlikely source of aluminum above MTAL in storm water. Copper is not known to be associated with industrial materials historically managed at the Site; however, copper was detected above BV. Based on previous sampling results, the Site may be a source of copper above MTAL in storm water. PCBs may be associated with industrial materials historically managed at the Site and were detected, although below the residential SSL. Based on site history and previous sampling results, the Site may be a source of PCBs above ATAL in storm water. No alpha-emitting isotopes are known to be associated with industrial materials historically managed at this Site and none were detected above BVs/FVs. Based on site history and previous sampling results, the Site is an unlikely source of adjusted gross alpha above ATAL in storm water.

*SWMU 46-009(a)*: Potential contaminants associated with industrial materials historically managed at this Site are metals, PCBs, and radionuclides.

- Aluminum—Aluminum was not detected above BV in soil samples collected during the 2010 Consent Order investigation
- Copper—Copper was not detected above BV in soil samples collected during the 2010 Consent Order investigation.
- PCBs—PCBs were detected in 2010 Consent Order samples with a maximum concentration 2% of the residential SSL.
- Gross alpha—Alpha-emitting radionuclides uranium-234, uranium-235/236, and uranium-238 were detected at maximum activities of 1, 1.7, and 1.2 times FVs/BVs, respectively, in 2010 Consent Order samples with.

In summary, aluminum and copper may be associated with industrial materials historically managed at the Site; however, aluminum and copper were not detected above BVs. Based on previous sampling results, the Site is an unlikely source of aluminum and copper above MTALs in storm water. PCBs may be associated with industrial materials historically managed at the Site but were only detected at low concentrations well below residential SSLs. Based on previous sampling results, the Site is an unlikely source of PCBs above ATAL in storm water. Uranium, which has alpha-emitting isotopes, may be associated with industrial materials historically managed at this Site, and uranium isotopes were detected slightly above BVs. Uranium isotopes, however, are excluded from the definition of adjusted gross-alpha radioactivity. No other alpha-emitting radionuclides were detected above BVs/FVs. Based on site history and previous sampling results, the Site is an unlikely source of adjusted gross alpha above ATAL in storm water.

*AOC C-46-001*: The potential contaminant associated with industrial materials historically managed at this Site is mercury.

- Aluminum—Samples collected during the 2010 Consent Order investigation were not analyzed for aluminum.
- Copper—Samples collected during the 2010 Consent Order investigation were not analyzed for copper.

- PCBs—Samples collected during the 2010 Consent Order investigation were not analyzed for PCBs.
- Gross alpha—Samples collected during the 2010 Consent Order investigation were not analyzed for alpha-emitting radionuclides.
- Consent Order samples were only analyzed for mercury since that is the only potential contaminant associated with the Site. No samples were collected at the site before the Consent Order went into effect in 2005.

In summary, aluminum, copper, PCBs, and alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. Based on site history, the Site is an unlikely source of aluminum and copper above MTALs and PCBs and adjusted gross alpha above ATALs in storm water.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figures 87-2 and 87-3. UTLs developed for urban settings were derived from runoff from developed landscapes on the Pajarito Plateau, including buildings, parking lots, roads, and associated features, and are labeled “Developed Background” in Figures 87-2 and 87-3.

Monitoring location CDB-SMA-1 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as from landscape consisting of Bandelier Tuff sediment. Metals including copper and aluminum are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals. PCBs are associated with building materials including paint, caulking, asphalt, solvents, transformers, and cutting oils.

- Aluminum—The aluminum UTL from developed urban landscape storm water run-on is 245 µg/L; the aluminum UTL for storm water containing sediments derived from Bandelier Tuff is 2210 µg/L. The aluminum result from 2011 is between these two values.
- Copper—The copper UTL from developed urban landscape storm water run-on is 32.3 µg/L; the copper UTL for storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L. The copper result from 2011 is between these two values.
- Gross alpha—The gross-alpha UTL from developed urban landscape storm water run-on is 32.5 pCi/L; the gross-alpha UTL for storm water containing sediments derived from Bandelier Tuff is 1490 pCi/L. The 2011 gross-alpha result is less than both of these values.
- PCB—The PCB UTL from developed urban landscape storm water run-on is 98 ng/L; the PCB UTL for storm water containing sediments derived from Bandelier Tuff is 11.7 ng/L. The PCB result from 2011 is between these two values.

All the analytical results for these samples are reported in the 2011 Annual Report.

#### **87.4 Inspections and Maintenance**

RG245.5 recorded one storm event at CDB-SMA-1 during the 2012 season. These rain events triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 87-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Visual	COMP-21612	03-26-2012
Annual Erosion Evaluation	COMP-23322	03-26-2012
Construction	COMP-24460	06-25-2012
Construction	COMP-24703	06-28-2012
Construction	COMP-24702	07-03-2012
Enhanced Control Measure Verification	BMP-24704	07-09-2012
Storm Rain Event	BMP-26893	08-30-2012

There were no maintenance activities conducted at CDB-SMA-1 in 2012.

### 87.5 Compliance Status

The Sites associated with CDB-SMA-1 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 87-3 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 46-003(c)	Baseline Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 07-30-2012
SWMU 46-004(d2)	Baseline Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 07-30-2012
SWMU 46-004(f)	Baseline Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 07-30-2012
SWMU 46-004(t)	Baseline Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 07-30-2012
SWMU 46-004(w)	Baseline Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 07-30-2012
SWMU 46-008(g)	Baseline Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 07-30-2012
SWMU 46-009(a)	Baseline Monitoring	Enhanced Control Corrective Action Monitoring	Initiated 07-30-2012
AOC C-46-001	Baseline Monitoring	Corrective Action Complete	NMED, July 13, 2012, "Approval of Request for Certificates of Completion for Six Solid Waste Management Units and One Area of Concern in the Upper Cañada del Buey Aggregate Area, Los Alamos National Laboratory"



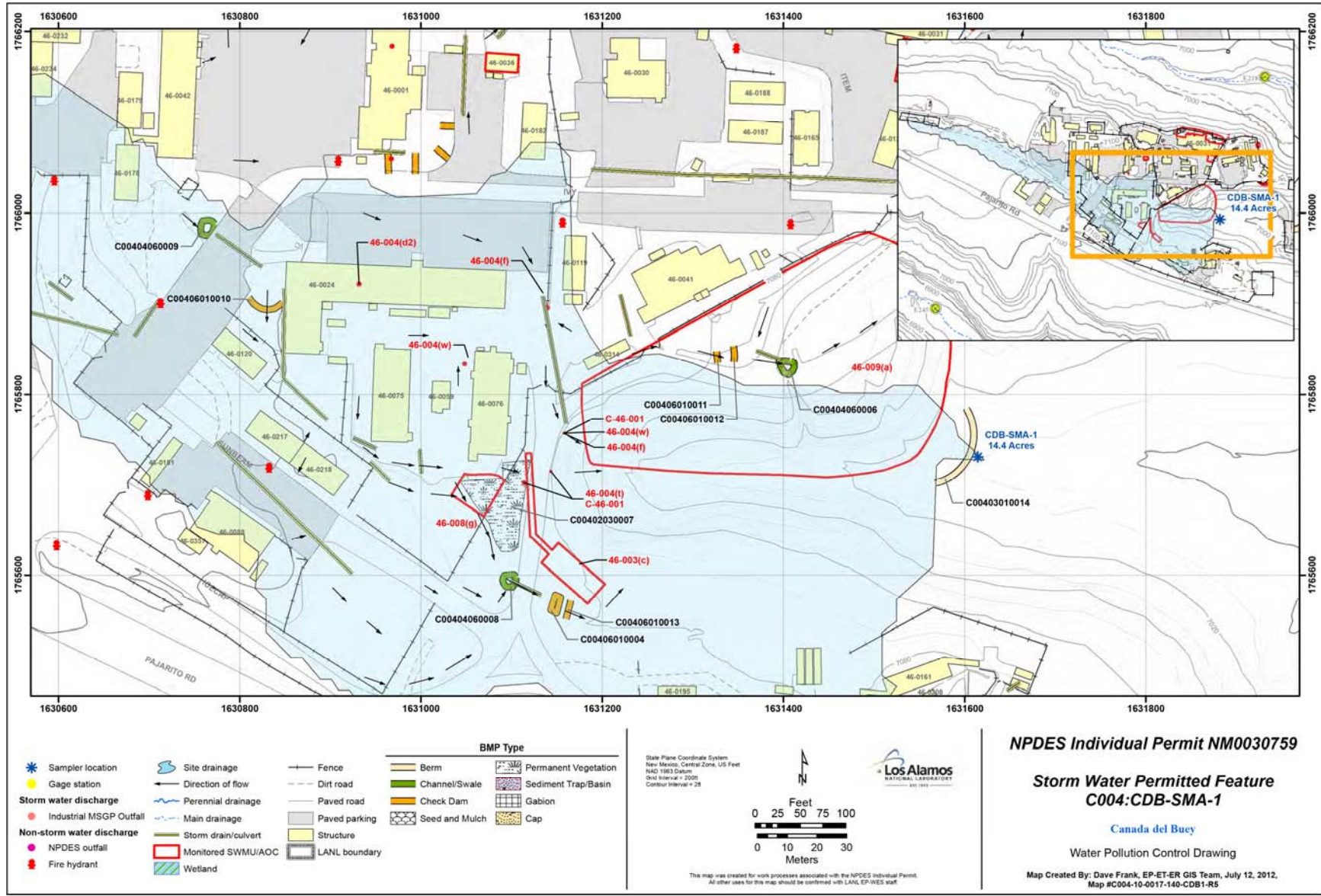
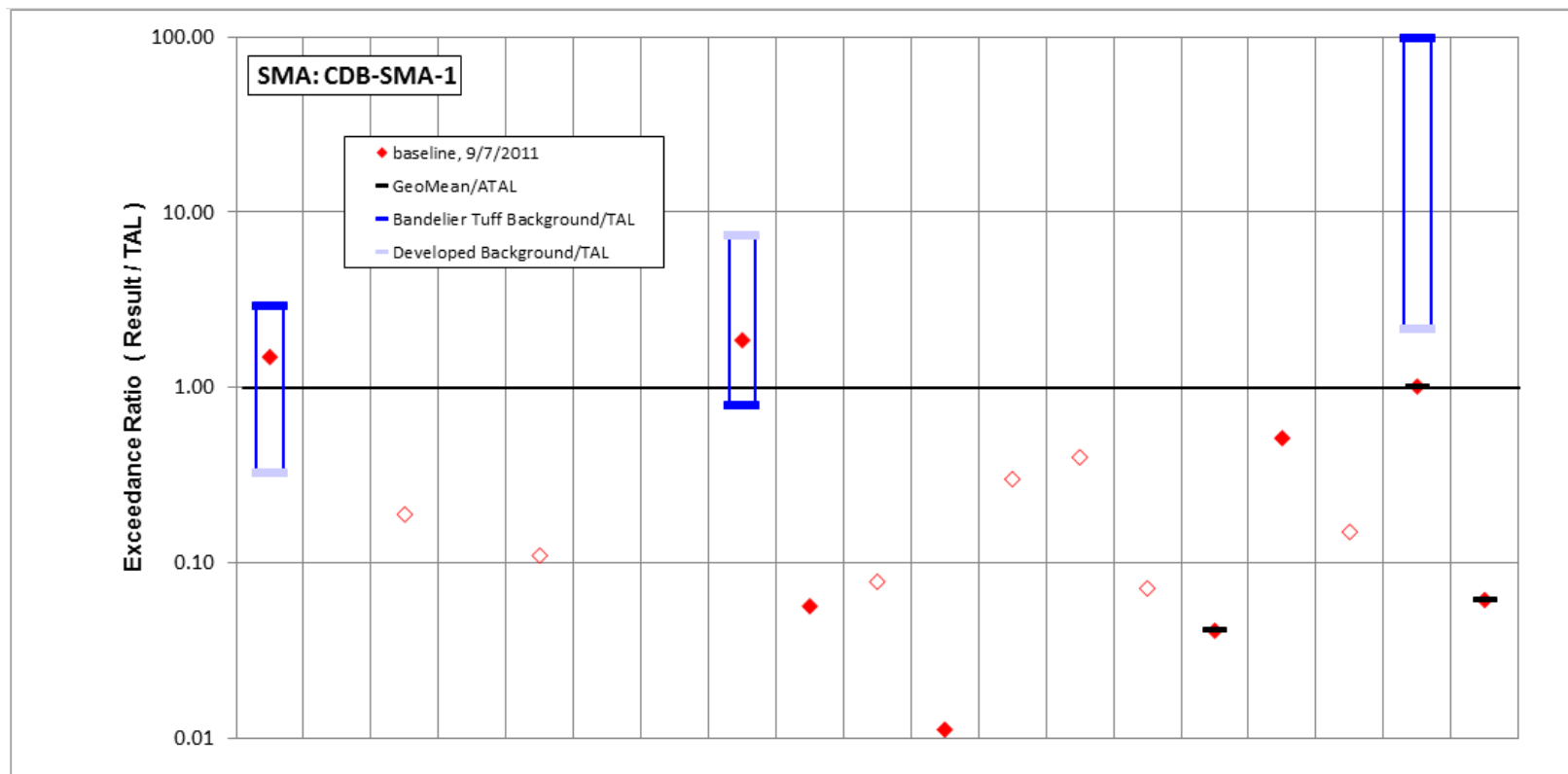


Figure 87-1 CDB-SMA-1 location map

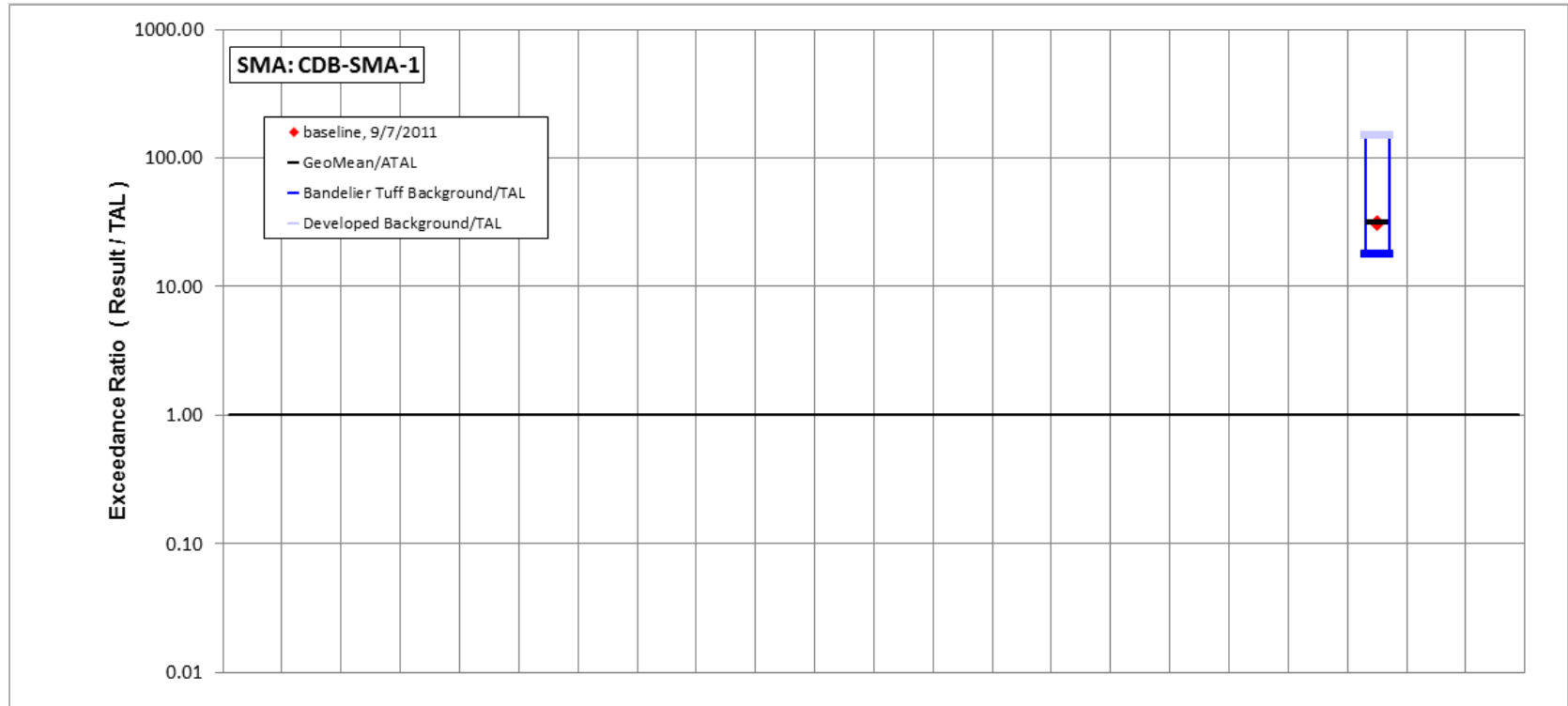




	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	Gross alpha	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
9/7/2011 result	<b>1120</b>	<i>1</i>	<i>1.7</i>	<i>28.4</i>	<i>0.11</i>	<i>2</i>	<i>3.5</i>	<b>8</b>	<i>0.96</i>	<i>0.06</i>	<i>1.9</i>	<i>1.5</i>	<i>0.2</i>	<i>0.45</i>	<i>4.1</i>	<i>21.6</i>	<i>0.002</i>	<b>15.2</b>	<i>1.84</i>
result / TAL	<b>1.5</b>	<i>0.002</i>	<i>0.19</i>	<i>0.0057</i>	<i>0.11</i>	<i>0.01</i>	<i>0.0035</i>	<b>1.9</b>	<i>0.056</i>	<i>0.078</i>	<i>0.011</i>	<i>0.3</i>	<i>0.4</i>	<i>0.071</i>	<i>0.041</i>	<i>0.51</i>	<i>0.15</i>	<b>1</b>	<i>0.061</i>

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 87-2 Inorganic analytical results summary plot for CDB-SMA-1



	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	<b>Total PCB</b>	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	-	-
std value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6E-04	-	-
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
<b>9/7/2011 result</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>0.02</b>	-	-
<b>result / TAL</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>31</b>	-	-

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 87-3 Organic analytical results summary plot for CDB-SMA-1

## **88.0 CDB-SMA-1.15: SWMUs 46-004(b), 46-004(y), 46-004(z), and 46-006(d)**

### **88.1 Site Descriptions**

Four historical industrial activity areas are associated with C005, CDB-SMA-1.15: Sites 46-004(b), 46-004(y), 46-004(z), and 46-006(d).

SWMU 46-004(b) is the location of a former alkali-metal cleaning tank (structure 46-0081). The tank measured approximately 4 ft × 8 ft × 6 ft tall and was located on asphalt pavement within 20 ft of the northwest corner of building 46-31, within the boundary of SWMU 46-006(d). The tank was of steel construction with an outlet plumbed to the SWMU 46-004(c), a dry well. The tank was used in the late 1950s and early 1960s to douse laboratory equipment from cesium plasma diode experiments before the equipment was reused or disposed of. Butanol or kerosene was used on the equipment to dissolve naturally occurring alkali isotopes of cesium and lithium. The tank was removed in 1973.

SWMU 46-004(y) is a former NPDES-permitted outfall (03A043) located approximately 40 ft north of building 46-31 at TA-46. This outfall consisted of a 6-in.-diameter cast-iron pipe that received blowdown from a cooling tower in building 46-31 and effluent from the building's floor drains, roof drains, and laboratory sinks. The outfall pipe discharged into Cañada del Buey. The outfall pipe to the canyon was removed before 1996, the roof drains were rerouted to new storm drains that discharge to the north side of building 46-31, and all floor and sink drains discharging to this outfall were rerouted to the SWSC plant. In July 1996, the outfall was removed from the NPDES permit.

SWMU 46-004(z) is an inactive outfall located approximately 60 ft northwest of building 46-31 at TA-46. This outfall consists of a 6-in.-diameter cast-iron pipe that receives storm water discharge from two roof drains at building 46-31 and discharges into Cañada del Buey. Previously, the outfall also served the floor drains for rooms 160 through 172 of building 46-31. The floor drains leading to this outfall were rerouted to the SWSC plant some time before 1993.

SWMU 46-006(d) is an area of potential soil contamination located on the north side of building 46-31 at TA-46. The area is approximately 50 ft × 300 ft and is level near building 46-31 but drops steeply towards the northern perimeter fence of TA-46 and into Cañada del Buey. With the exception of two asphalt-paved delivery and parking areas located at the eastern and western boundaries of the SWMU, most of the area is unpaved. Oils and possibly other materials spilled in the area. Engineering drawings show that a drain from room 111A also discharged to this SWMU. During a 1986 site visit, 55 gal. drums, cans, rusty chemical storage containers, and a thick layer of oil were observed on the northern slope of the site. SWMUs 46-004(a–c) are located within the SWMU 46-006(d) boundary. Drainages that flow into Cañada del Buey, north of TA-46 perimeter fence, receive runoff from SWMU 46-006(d).

The project map (Figure 88-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### **88.2 Control Measures**

Most of the potential run-on to this SMA originates in the paved areas and roof drains in the developed area in the southern portion of the SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 88-1).

**Table 88-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
C00501060009	Seed and Mulch - Erosion Control Blankets		X	X		CB
C00502010005	Established Vegetation - Grasses and Shrubs			X		CB
C00503010006	Berms - Earthen		X		X	CB
C00504060007	Channel/Swale - Riprap	X		X		CB
C00504060008	Channel/Swale - Riprap	X		X		CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

### 88.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at CDB-SMA-1.15. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 88.4 Inspections and Maintenance

RG245.5 recorded one storm event at CDB-SMA-1.15 during the 2012 season. These rain events triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 88-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23323	05-30-2012
Storm Rain Event	BMP-26896	08-29-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 88-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-27211	Additional rock added to riprap C00504060008.	09-04-2012	6 day(s)	Maintenance conducted in timely manner.

### 88.5 Compliance Status

The Sites associated with CDB-SMA-1.15 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 88-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 46-004(b)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 46-004(y)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 46-004(z)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 46-006(d)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment



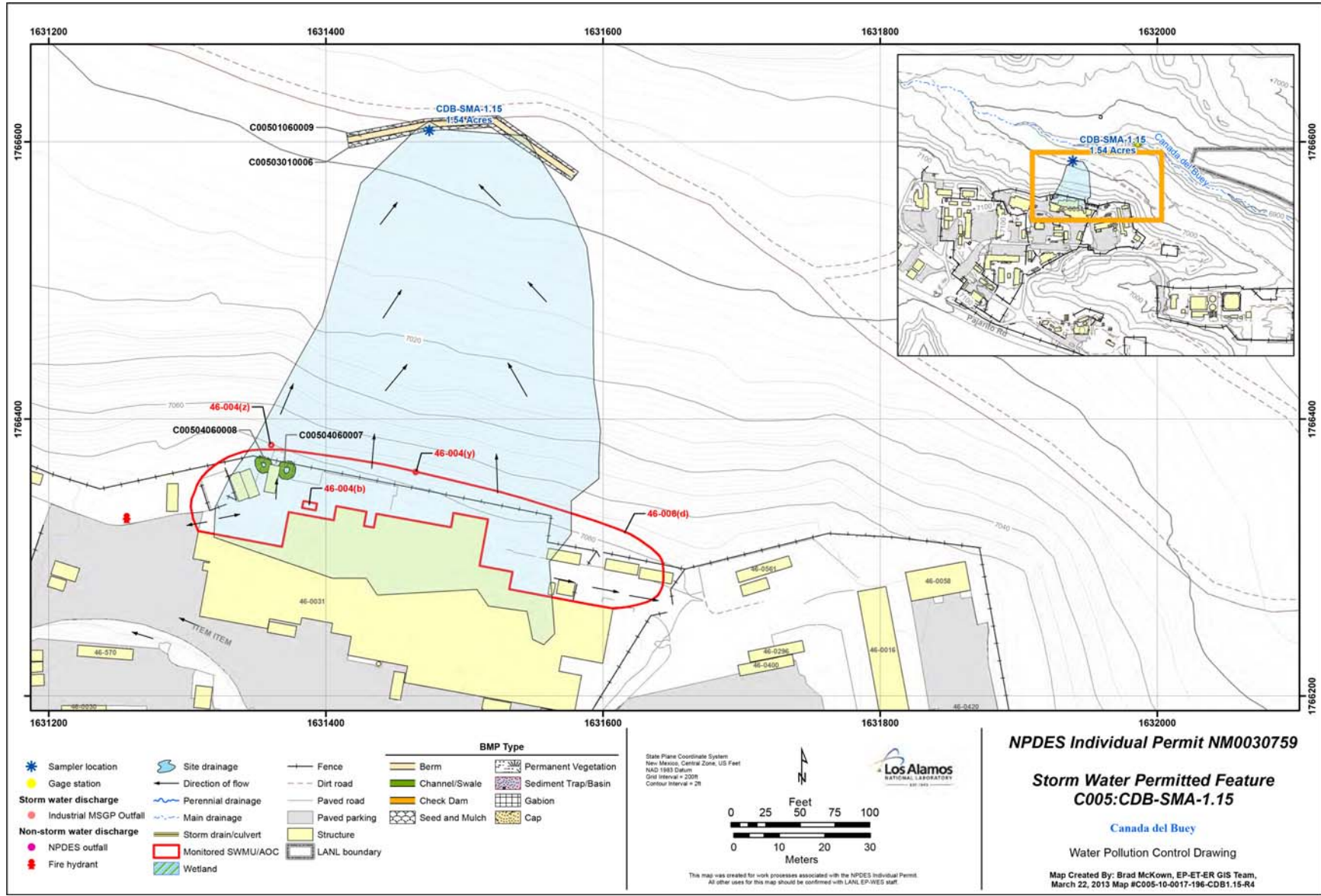


Figure 88-1 CDB-SMA-1.15 location map

**89.0 CDB-SMA-1.35: SWMUs 46-004(a2), 46-004(u), 46-004(v), 46-004(x), 46-006(d), and 46-008(f)**

**89.1 Site Descriptions**

Six historical industrial activity areas are associated with C006, CDB-SMA-1.35: Sites 46-004(a2), 46-004(u), 46-004(v), 46-004(x), 46-006(d), and 46-008(f).

SWMU 46-004(a2) is an outfall located on the east side of building 46-31 at TA-46. The outfall received effluent from a 6-in.-diameter industrial drainline in the building. The sinks and drains in rooms 101, 103, and 105 of building 46-31 were connected to this outfall. The outfall discharged to a shallow ditch on the east side of building 46-31, which leads approximately 50 ft north to a storm drain culvert discharging into Cañada del Buey. By 1994, the outfall pipe was plugged, and all drains leading to the outfall either were removed from service or were rerouted to the SWSC plant. Building 46-31 housed test cells with electrical furnaces for thermal testing of graphite and uranium-235/uranium-238 fuel rods in support of the Rover Program. Welding experiments involving thorium were also conducted in building 46-31.

SWMU 46-004(u) is an inactive outfall located approximately 10 ft north of former building 46-87 at TA-46. The outfall consisted of an 8-in.-diameter cast-iron pipe that discharged into Cañada del Buey. This pipe was the overflow pipe for a concrete wet well located in former building 46-87. The wet well was designed as a holding pit for deionized water and historically received effluent from a closed-loop cooling water system serving buildings 46-16, 46-25, and 46-31. The wet well also received effluent from sink drains in building 46-25, which was a battery storage facility also used for small-scale painting activities in support of the Rover Program. Building 46-87 was the pump house for an adjacent cooling tower (former building 46-86) that housed two wet well systems and mechanical equipment associated with the cooling tower. Building 46-87 also stored water-treatment chemicals. Building 46-87 underwent D&D in December 2001. By the early 1990s, the outfall had been plugged, and effluent discharged to the wet well was periodically pumped out and disposed of at the SWSC plant. By 1998, the building 46-25 drains that discharged to the wet well were removed from service.

SWMU 46-004(v) is an inactive outfall located approximately 20 ft north of former building 46-87 at TA-46. The outfall consists of a 6-in.-diameter cast-iron pipe that discharged effluent from the roof and floor drains of former building 46-87 into Cañada del Buey. Building 46-87 was the pump house for an adjacent cooling tower (former building 46-86) that housed two wet well systems and mechanical equipment associated with the cooling tower. This building was also used to store water-treatment chemicals. By the early 1990s, the floor drains in former building 46-87 had been plugged, and the outfall was receiving only discharges from the roof drains. Building 46-87 underwent D&D in December 2001.

SWMU 46-004(x) is an outfall located approximately 30 ft north of building 46-31 at TA 46. The outfall consists of a 6-in.-diameter pipe that receives effluent from roof drains in building 46-31. The outfall pipe extends approximately 1 ft beyond the steep canyon slope and discharges to a 1- to 2-ft-wide drainage that stretches to the toe of the slope of Cañada del Buey. Building 46-31 housed test cells with electrical furnaces for thermal testing of graphite and uranium-235/uranium-238 fuel rods in support of the Rover Program. Welding experiments involving thorium were also conducted in building 46-31.

SWMU 46-006(d) is an area of potential soil contamination located on the north side of building 46-31 at TA-46. The area is approximately 50 ft × 300 ft and is level near building 46-31 but drops steeply towards the northern perimeter fence of TA-46 and into Cañada del Buey. With the exception of two asphalt-

paved delivery and parking areas located at the eastern and western boundaries of the SWMU, most of the area is unpaved. Oils and possibly other materials spilled in the area. Engineering drawings show that a drain from room 111A also discharged to this SWMU. During a 1986 site visit, 55 gal. drums, cans, rusty chemical storage containers, and a thick layer of oil were observed on the northern slope of the site. SWMUs 46-004(a, b, and c) are located within the SWMU 46-006(d) boundary. Drainages that flow into Cañada del Buey, north of TA-46 perimeter fence, receive runoff from SWMU 46-006(d).

SWMU 46-008(f) is a paved storage area located next to the southeast corner of building 46-31 at TA-46. During a 1986 site visit, four drums of oil, which could have been product or waste oil, were observed at this location.

The project map (Figure 89-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 89.2 Control Measures

Potential run-on to the SMA originates from the paved, developed area along the southern portion of the SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 89-1).

**Table 89-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
C00601010008	Seed and Mulch - Seed and Wood Mulch			X		CB
C00602010001	Established Vegetation - Grasses and Shrubs			X		CB
C00602020005	Established Vegetation - Forested/Needle Cast			X		CB
C00603010006	Berms - Earthen		X		X	CB
C00604060009	Channel/Swale - Riprap	X		X		CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

### 89.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at CDB-SMA-1.35. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 89.4 Inspections and Maintenance

RG245.5 recorded one storm event at CDB-SMA-1.35 during the 2012 season. These rain events triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 89-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23324	05-30-2012
Storm Rain Event	BMP-26897	08-29-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 89-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-27209	Added seed and mulch to seed/mulch to seed and mulch C00601010008.	08-31-2012	2 day(s)	Maintenance conducted in timely manner.
BMP-27210	Reseeded and rematted berm C00603010006.	09-05-2012	7 day(s)	Maintenance conducted in timely manner.

**89.5 Compliance Status**

The Sites associated with CDB-SMA-1.35 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 89-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 46-004(a2)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 46-004(u)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 46-004(v)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 46-004(x)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 46-006(d)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 46-008(f)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment



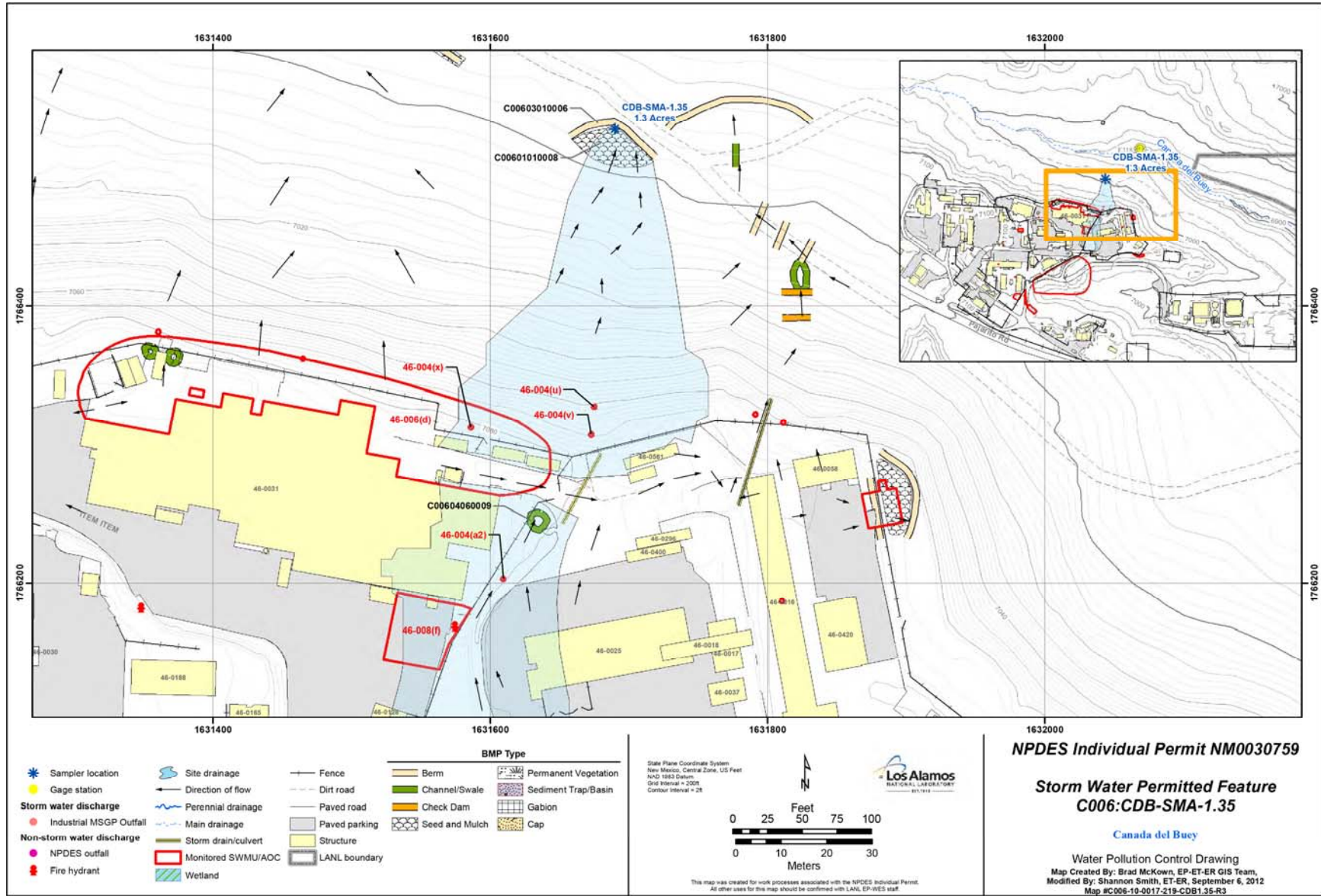


Figure 89-1 CDB-SMA-1.35 location map



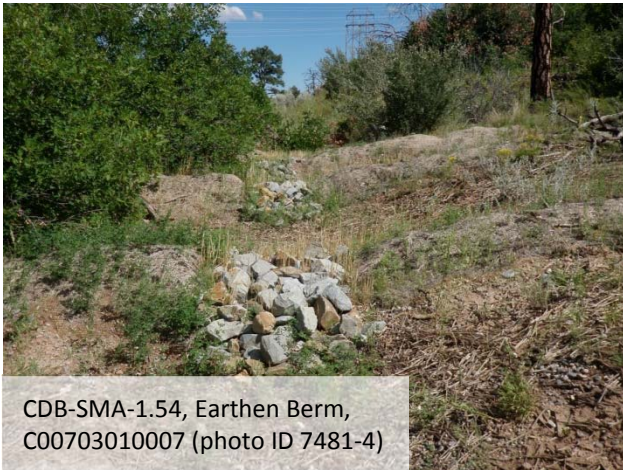
## 90.0 CDB-SMA-1.54: SWMUs 46-004(h), 46-004(q), and 46-006(d)

### 90.1 Site Descriptions

Three historical industrial activity areas are associated with C007, CDB-SMA-1.54: Sites 46-004(h), 46-004(q), and 46-006(d).

SWMU 46-004(h) consists of an area of potential soil contamination associated with exhaust emissions from stacks on building 46-16 and inactive outfall from an industrial drainline in building 46-16 at TA-46. Between the late 1950s and early 1970s, work in building 46-16 that generated exhaust emissions involved experiments conducted with uranium-loaded graphite and tests of uranium fuel rods as part of the Rover Program. The outfall component of SWMU 46-004(h) consists of an inactive 6-in.-diameter cast-iron pipe that received effluent from building floor drains and discharged to an outfall north of building 46-16 into Cañada del Buey. In 1995, floor drains that discharged to this outfall either were removed from service or were rerouted to the SWSC plant.

SWMU 46-004(q) is an inactive outfall located approximately 40 ft north of building 46-58 at TA-46. The outfall consists of a 6-in.-diameter cast-iron pipe that discharged into Cañada del Buey. The source of the discharge to the outfall is not known.



CDB-SMA-1.54, Earthen Berm, C00703010007 (photo ID 7481-4)

SWMU 46-006(d) is an area of potential soil contamination located on the north side of building 46-31 at TA-46. The area is approximately 50 ft × 300 ft and is level near building 46-31 but drops steeply towards the northern perimeter fence of TA-46 and into Cañada del Buey. With the exception of two asphalt-paved delivery and parking areas located at the eastern and western boundaries of the SWMU, most of the area is unpaved. Oils and possibly other materials spilled in the area. Engineering drawings show that a drain from room 111A also discharged to this SWMU. During a 1986 site visit, 55 gal. drums,

cans, rusty chemical storage containers, and a thick layer of oil were observed on the northern slope of the site. SWMUs 46-004(a, b, and c) are located within the SWMU 46-006(d) boundary. Drainages that flow into Cañada del Buey, north of TA-46 perimeter fence, receive runoff from SWMU 46-006(d).

The project map (Figure 90-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 90.2 Control Measures

Most of the run-on contributions from the paved and developed areas near building 46-0016 are diverted to the east away from the SMA. There is potential run-on from the unpaved access road crossing the northern area of the SMA. Existing controls serve to mitigate both run-on and runoff from this SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 90-1).

**Table 90-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
C00702010003	Established Vegetation - Grasses and Shrubs			X		CB
C00703010007	Berms - Earthen		X		X	CB
C00703010008	Berms - Earthen		X		X	CB
C00703010009	Berms - Earthen	X			X	CB
C00703010019	Berms - Earthen		X		X	B
C00704050014	Channel/Swale - Water Bar			X		CB
C00704060006	Channel/Swale - Riprap		X	X		CB
C00706020015	Check Dam - Log		X		X	CB
C00706020016	Check Dam - Log		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 90.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at CDB-SMA-1.54. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 90.4 Inspections and Maintenance

RG245.5 recorded one storm event at CDB-SMA-1.54 during the 2012 season. These rain events triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 90-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23325	05-30-2012
Storm Rain Event	BMP-26900	08-30-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 90-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-27282	Repaired seed and matting on berm C00703010007.	09-06-2012	7 day(s)	Maintenance conducted in timely manner.
BMP-27283	Repaired seed and matting on berm C00703010008.	09-06-2012	7 day(s)	Maintenance conducted in timely manner.
BMP-27284	Repaired seed and matting on berm C00703010009.	09-06-2012	7 day(s)	Maintenance conducted in timely manner.
BMP-27285	Repaired log check dam C00706020015.	09-07-2012	8 day(s)	Maintenance conducted in timely manner.
BMP-27287	Repaired log check dam C00706020016.	09-07-2012	8 day(s)	Maintenance conducted in timely manner.

**90.5 Compliance Status**

The Sites associated with CDB-SMA-1.54 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 90-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 46-004(h)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 46-004(q)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 46-006(d)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

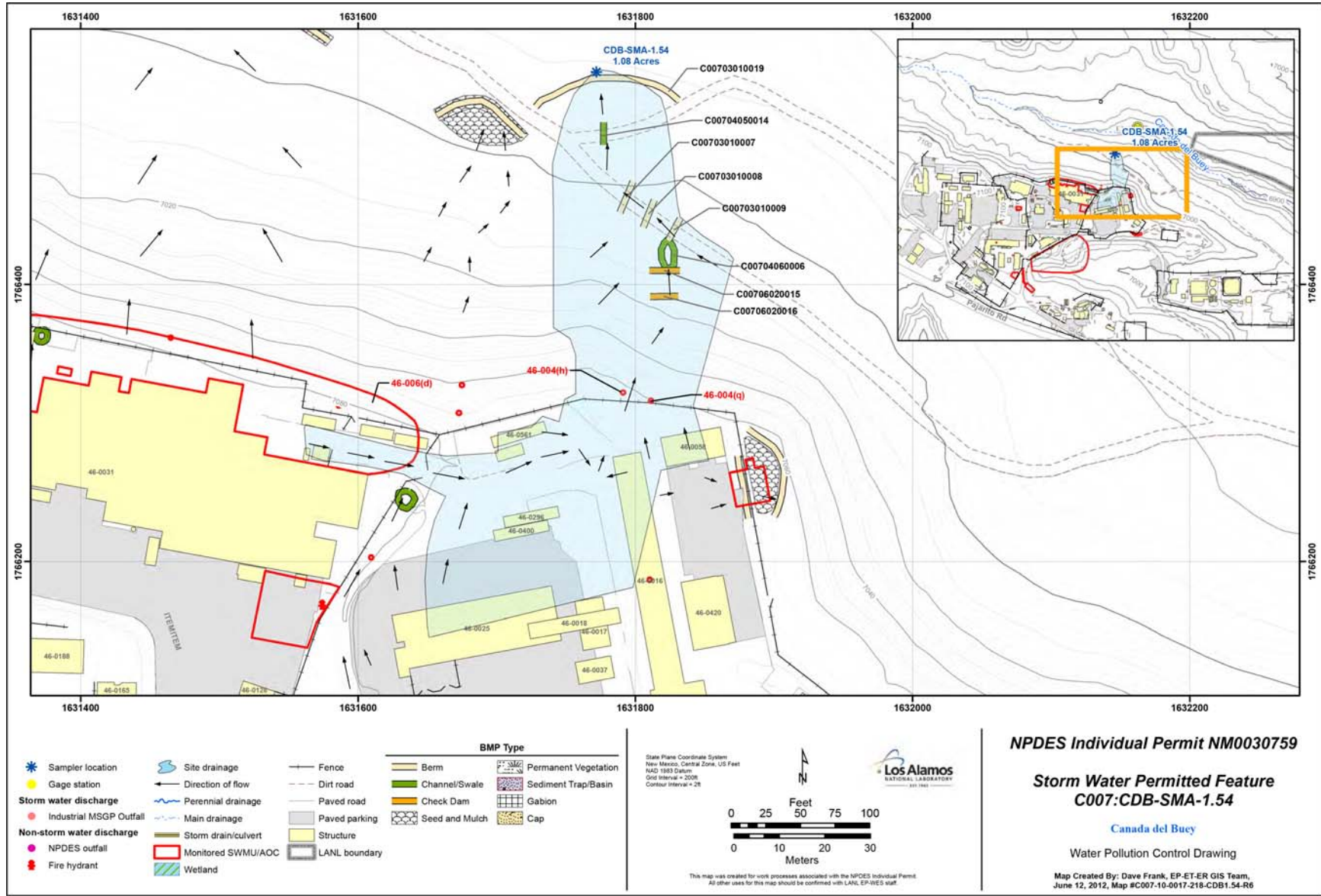


Figure 90-1 CDB-SMA-1.54 location map

**91.0 CDB-SMA-1.55: SWMU 46-003(e)**

**91.1 Site Descriptions**

One historical industrial activity area is associated with C008, CDB-SMA-1.55: Site 46-003(e).

SWMU 46-003(e) is a septic system consisting of a septic tank (structure 46-66), a siphon tank (structure 46-67), a distribution box (structure 46-68), and a drain field at TA-46. Septic tank 46-66, located approximately 20 ft east of building 46-58 outside the TA-46 perimeter fence, served the restroom facility, shower, water cooler, janitorial sink, and mechanical room floor drain in building 46-58, which contained office space, a laboratory, a machine shop, and an equipment room. The septic system was removed from service in approximately 1972 or 1973, and its drainline was rerouted to the SWMU 46-002 surface impoundment system. Septic tank 46-66 was emptied, filled, and left in place.

The project map (Figure 91-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

**91.2 Control Measures**

The primary run-on source for this SMA is from roof drains associated with building 46-0016 and paved area around the building. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 91-1).

**Table 91-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
C00801010011	Seed and Mulch - Seed and Wood Mulch			X		CB
C00802010002	Established Vegetation - Grasses and Shrubs			X		CB
C00803010010	Berms - Earthen		X		X	CB
C00803120009	Berms - Rock	X			X	CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

**91.3 Storm Water Monitoring**

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at CDB-SMA-1.55. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

**91.4 Inspections and Maintenance**

RG245.5 recorded one storm event at CDB-SMA-1.55 during the 2012 season. These rain events triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.



**Table 91-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23326	05-23-2012
Storm Rain Event	BMP-26898	08-29-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 91-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-27208	Repaired berm C00803010010 by reseeding and rematting.	09-06-2012	8 day(s)	Maintenance conducted in timely manner.

**91.5 Compliance Status**

The Site associated with CDB-SMA-1.55 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 91-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 46-003(e)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment



CDB-SMA-1.55, Permanent Vegetation Grasses and Shrubs, C00802010002 (photo ID 11462-2)

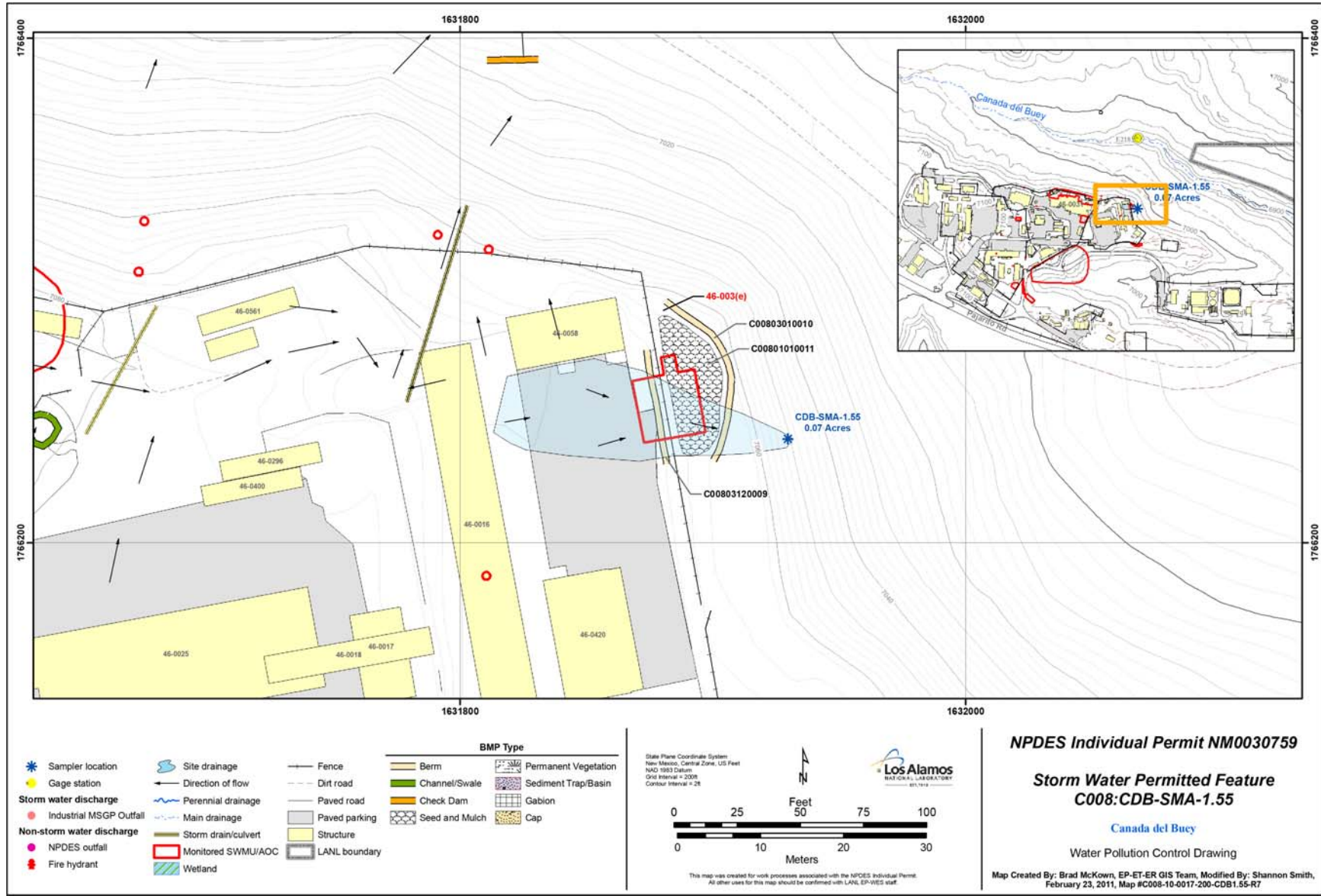


Figure 91-1 CDB-SMA-1.55 location map

**92.0 CDB-SMA-1.65: SWMU 46-003(b)**

**92.1 Site Descriptions**

One historical industrial activity area is associated with C009, CDB-SMA-1.65: Site 46-003(b).

SWMU 46-003(b) is a septic system consisting of a septic tank (structure 46-22), a distribution box (structure 46-29), associated drainline, and drain field located at TA-46. Septic tank 46-22 and its drain field, located approximately 50 ft south of building 46-77, served the restroom facilities in building 46-17. This building housed a generator that charged batteries for the Rover Program. The septic system was removed from service in approximately 1992 or 1993, and drainlines that discharged to SWMU 46-003(b) were rerouted to the SWMU 46-002 surface impoundment system. Septic tank 46-22 was emptied, filled, and left in place. The drainlines that previously served SWMU 46-003(b) were rerouted to the SWSC plant in the early 1990s and are currently active.

The project map (Figure 92-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

**92.2 Control Measures**

Paved areas to the north and northwest are the potential source of run-on at this Permitted Feature. Run-on from the paved areas is diverted and controlled by the channel and riprap at the southeast corner of the SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 92-1).

**Table 92-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
C00903010004	Berms - Earthen		X		X	B
C00904010002	Channel/Swale - Earthen	X		X		CB
C00904060001	Channel/Swale - Riprap	X		X		CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

**92.3 Storm Water Monitoring**

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at CDB-SMA-1.65. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

**92.4 Inspections and Maintenance**

RG245.5 recorded one storm event at CDB-SMA-1.65 during the 2012 season. These rain events triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.



**Table 92-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23328	05-23-2012
Storm Rain Event	BMP-26899	08-29-2012

There were no maintenance activities conducted at CDB-SMA-1.65 in 2012.

**92.5 Compliance Status**

The Site associated with CDB-SMA-1.65 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 92-3 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 46-003(b)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

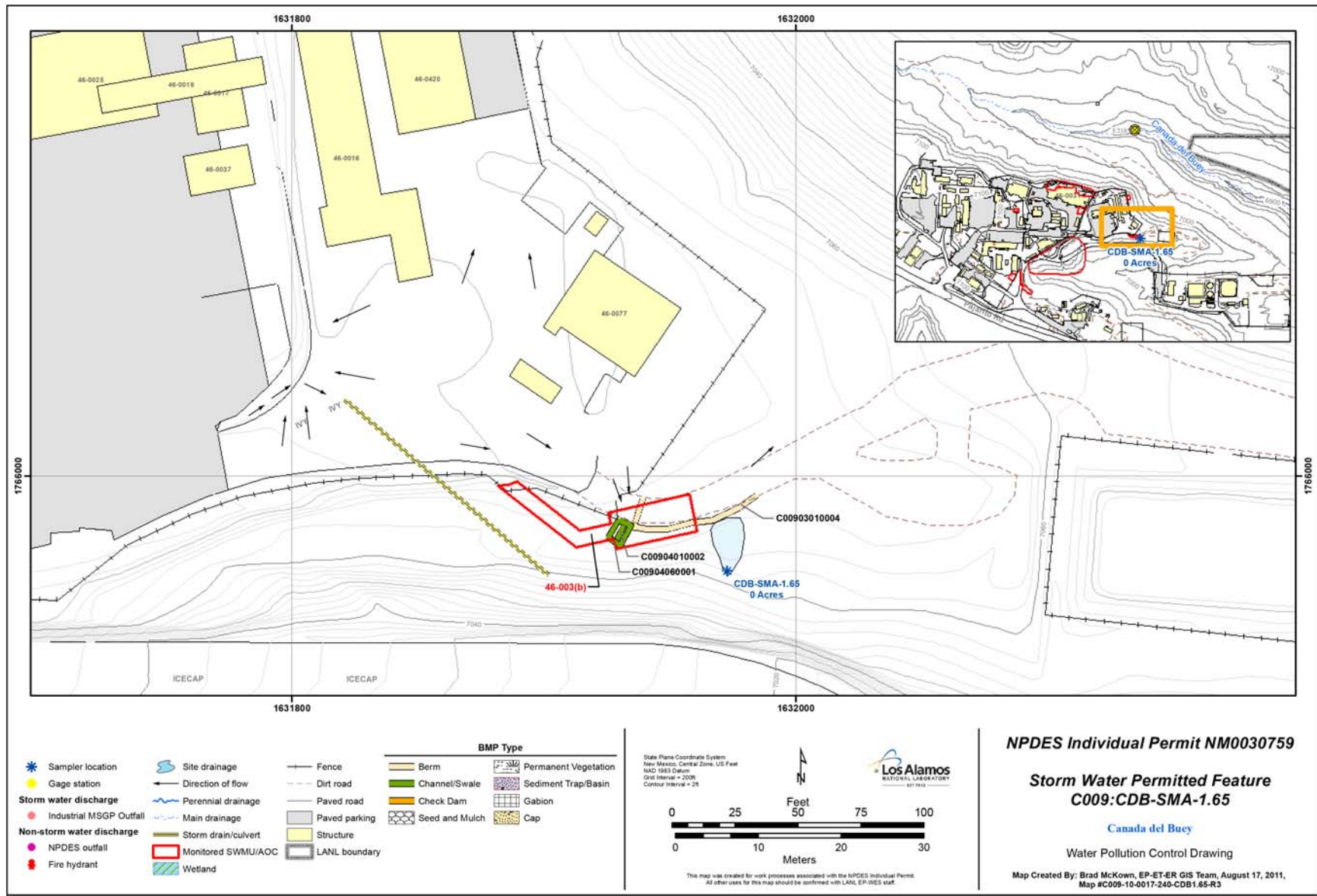


Figure 92-1 CDB-SMA-1.65 location map



## 93.0 CDB-SMA-4: SWMUs 54-017, 54-018, and 54-020

### 93.1 Site Descriptions

Three historical industrial activity areas are associated with C010, CDB-SMA-4: Sites 54-017, 54-018, and 54-020.

SWMU 54-017 consists of inactive disposal pits 1 through 8, 10, 12, 13, 16 through 22, and 24. Pits 1 through 8, 10, 12, 13, 16 through 22, and 24 were operational between 1959 and 1980 and received radioactive, mixed, and transuranic (TRU) wastes in the form of wing tanks, dry boxes, building debris, sludge drums, lab waste, contaminated soil, decontamination and decommissioning (D&D) waste, filter plenums, and uranium. Pits 1 through 8, 10, 12, 13, 16 through 22, and 24 are located in the eastern portion of Area G with volumes ranging from 1371 to 56,759 yd<sup>3</sup>. When filled, the pits were covered with 3.3 ft of consolidated crushed tuff and 4 in. of topsoil and reseeded with native grasses.

SWMU 54-018 consists of disposal pits 25 through 33 and 35 through 37. Only pit 29 (although no longer in use) is considered a regulated unit until RCRA closure is certified and approved by NMED. Pits 25 through 28 and 30 through 36 were operational between 1979 and 1980 and received radioactive, mixed, and TRU waste in the form of reactor control rods, D&D waste, contaminated soil, transformers, glove boxes, asbestos, and laboratory waste and range in volume from 20,957 to 59,930 yd<sup>3</sup>. Pit 29 operated until 1986. Pit 37 operated from 1990 to 1997 and primarily received circuit boards and contaminated soil. When filled, the pits were covered with 3.3 ft of consolidated crushed tuff and 4 in. of topsoil, and reseeded with native grasses.



CDB-SMA-4, Rock Check Dam, C01006010008 (photo ID 8509-3)

SWMU 54-020 consists of disposal shafts C1 through C10, C12, C13, 22, 35 through 37, 93 through 95, 99 through 108, 114, 115, 118 through 136, 138 through

140, 151 through 160, 189 through 192, and 196. These shafts were operational between 1970 and the early 1990s. Only shaft 124 (although no longer in use) is considered active until RCRA closure is certified and approved by NMED. The shafts contain one or a combination of the following waste types: PCB residues, low-level waste (LLW), hazardous and mixed waste. The shafts range in size from 1 ft to 8 ft in diameter and 25 ft to 65 ft deep and are located throughout the eastern portion of Area G. Disposal shafts were typically filled with waste to within 3 ft of the ground surface, backfilled with crushed tuff, and covered with a concrete dome.

The project map (Figure 93-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 93.2 Control Measures

There is the potential for run-on contribution from paved areas on the east and west sides of the project area. Runoff is possible from the paved roads and the paved areas around the existing structures. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 93-1).

**Table 93-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
C01002010003	Established Vegetation - Grasses and Shrubs			X		CB
C01004020005	Channel/Swale - Concrete/Asphalt		X	X		CB
C01004060007	Channel/Swale - Riprap		X	X		CB
C01005010004	Sediment Traps and Basins - Sediment Trap		X		X	CB
C01006010006	Check Dam - Rock		X		X	CB
C01006010008	Check Dam - Rock	X			X	CB
C01006010009	Check Dam - Rock	X			X	CB
C01006010010	Check Dam - Rock	X			X	CB
C01006010011	Check Dam - Rock	X			X	CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

### 93.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at CDB-SMA-4. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 93.4 Inspections and Maintenance

RG-TA-54 recorded three storm events at CDB-SMA-4 during the 2012 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 93-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Storm Rain Event	BMP-23253	05-15-2012
Annual Erosion Evaluation	COMP-23327	06-07-2012
Storm Rain Event	BMP-24749	07-12-2012
Storm Rain Event	BMP-26197	08-03-2012

There were no maintenance activities conducted at CDB-SMA-4 in 2012.

**93.5 Compliance Status**

The Sites associated with CDB-SMA-4 are high priority Sites. Corrective action is to be certified complete within 3 yr of the effective date of the IP (i.e., November 2015).

**Table 93-3 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 54-017	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 54-018	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 54-020	Baseline Monitoring	Baseline Monitoring Extended	No Comment

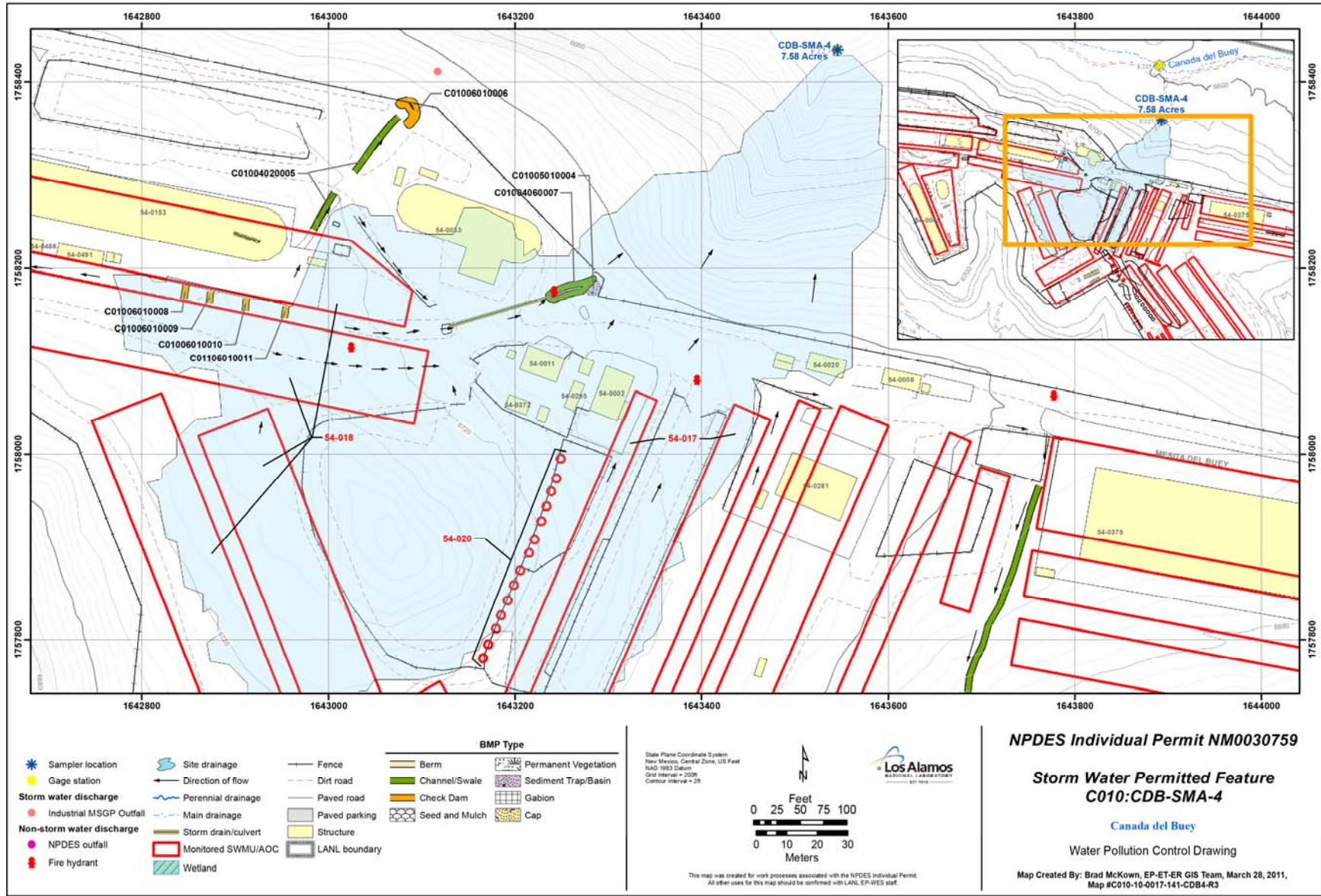


Figure 93-1 CDB-SMA-4 location map



**94.0 M-SMA-1: SWMUs 03-050(a) and 03-054(e)**

**94.1 Site Descriptions**

Two historical industrial activity areas are associated with M001, M-SMA-1: Sites 03-050(a) and 03-054(e).

SWMU 03-050(a) is an area of potential soil contamination associated with the exhaust emissions from 24 active stacks on the roof of the Chemistry and Metallurgy Research (CMR) building 03-0029 at TA-03. Building 03-0029 was built in 1961 and houses an irradiated-fuel examination facility and analytical chemistry operations that involve handling radioactive materials containing uranium, plutonium, iodine, mixed fission products, and tritium. High-efficiency particulate air, Aerosolve 95, and charcoal filters are used to remove radioactive particulates from stack effluent gas. Potential contaminants associated with industrial materials historically managed at this Site are radionuclides.



M-SMA-1, Gabions, M00107010006 (photo ID 28341-3)

SWMU 03-054(e) is an outfall located in upper Mortandad Canyon. The outfall receives discharge from several sources at the CMR Building (03-29), including drainage from roofs over the west wing and surface water runoff from the asphalt area around the building. The outfall also received effluent from an unintentional one-time release in 1974 from an industrial waste manhole (AOC C-03-006). The overflow resulted from a plug in the industrial waste line and was estimated to be between 500 and 1000 gal. of radioactive liquid waste (RLW). The overflow spilled to the surrounding paved area,

traveled north along Diamond Drive, flowed into the storm sewer through a storm drain grate, and ultimately discharged into upper Mortandad Canyon through the SWMU 03-054(e) outfall. A small dam was built in the streambed at the base of the canyon to contain the effluent. Subsequent cleanup action, based on residual radioactive contamination cleanup levels of 25pCi/g, removed approximately 142 ft<sup>3</sup> of contaminated soil from Mortandad Canyon. Potential contaminants associated with industrial materials historically managed at this Site are metals and radionuclides.

The project map (Figure 94-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

The Site boundary for SWMU 03-050(a) has been modified to match the boundary depicted in the administrative record for the Consent Order, which is the controlling authority for SWMU and AOC boundary definitions used in the IP. The Site boundary change was minor and did not affect the SMA boundary or sampler location. The updated boundary is shown on the project map (Figure 94-1) and the Site physical characteristic information listed in Attachment 4 has been updated.

**94.2 Control Measures**

Run-on at this Permitted Feature is significant. The run-on originates on the numerous paved areas, roads and parking lots in the area as well as from roof drainage from area buildings. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 94-1).



Enhanced controls were installed and certified on December 13, 2012, as part of corrective action. Photographs of the enhanced controls are available at <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/construction-certifications.php>.

**Table 94-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M00102010007	Established Vegetation - Grasses and Shrubs			X		CB
M00102020005	Established Vegetation - Forested/Needle Cast			X		CB
M00107010001	Gabions - Gabions	X			X	CB
M00107010006	Gabions - Gabions		X		X	CB
M00107010008	Gabions - Gabions		X		X	EC

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

### 94.3 Storm Water Monitoring

SWMUs 03-050(a) and 03-054(e) are monitored within M-SMA-1. Following the installation of baseline control measures, a baseline storm water sample was collected on August 19, 2011, and September 7, 2011 (Figures 94-2 and 94-3). Analytical results from this sample yielded two TAL exceedances:

- Gross-alpha activities of 18.1 and 35 pCi/L (ATAL is 15 pCi/L), and
- PCB concentrations of 20 and 70 ng/L (ATAL is 0.6 ng/L).

These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

*SWMU 03-050(a)*: Potential contaminants associated with industrial materials historically managed at this Site are radionuclides.

- Consent Order sampling has not been performed.
- No investigations were conducted at SWMU 03-050(a) before the Consent Order went into effect in 2005.

In summary, PCBs are not associated with industrial materials historically managed at this Site. Plutonium and uranium, which have alpha-emitting isotopes, may be associated with industrial materials historically managed at this Site. Plutonium and uranium isotopes, however, are excluded from the definition of adjusted gross-alpha radioactivity. No other alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Based on site history, the Site is an unlikely source of PCBs and adjusted gross alpha above ATAL in storm water.

*SWMU 03-054(e)*: Potential contaminants associated with industrial materials historically managed at this Site are metals and radionuclides.

- PCBs—PCBs were detected at a maximum concentration 2% of the residential SSL in 2009 Consent Order samples.
- Gross alpha—Alpha-emitting radionuclides plutonium-238 and plutonium-239/240 were detected at maximum activities of 1.9 and .07 times FVs/BVs, respectively, in 2010 Consent Order samples.

In summary, PCBs are not known to be associated with industrial materials historically managed at the Site and were detected at low concentrations well below residential SSLs. Plutonium and uranium, which have alpha-emitting isotopes, may be associated with industrial materials historically managed at this Site. Plutonium isotopes were detected slightly above FVs, and uranium isotopes were not detected above BVs. In addition, plutonium and uranium isotopes are excluded from the definition of adjusted gross-alpha radioactivity. No other alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Based on site history and previous sampling results, the Site is an unlikely source of PCBs and adjusted gross alpha above ATAL in storm water.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figures 94-2 and 94-3. UTLs developed for urban settings were derived from runoff from developed landscapes on the Pajarito Plateau, including buildings, parking lots, roads, and associated features, and are labeled “Developed Background” in Figures 94-2 and 94-3.



M-SMA-1, Permanent Vegetation Grasses and Shrubs, M00102010007 (photo ID 7493-3)

Monitoring location M-SMA-1 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as from landscape consisting of Bandelier Tuff sediment. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals. PCBs are associated with building materials including paint, caulking, asphalt, solvents, transformers, and cutting oils.

- Gross alpha—The gross-alpha UTL from developed urban landscape storm water run-on is 32.5 pCi/L; the gross-alpha UTL for storm water containing sediments derived from Bandelier Tuff is 1490 pCi/L. One of the 2011 gross-alpha results is less than both values, and the other result is between them.
- PCB—The PCB UTL from developed urban landscape storm water run-on is 98 ng/L; the PCB UTL for storm water containing sediments derived from Bandelier Tuff is 11.7 ng/L. The PCB results from 2011 are between these two values.

All the analytical results for these samples are reported in the 2011 Annual Report.

The monitoring station was relocated on October 15, 2012, and is situated approximately 75 ft southeast of the original sampler location and downstream of the newly installed control. The new

location of the sampler is positioned below the enhanced control and will provide a more representative sample of storm water discharge from SWMUs 03-050(a) and 03-054(e) and the newly installed enhanced control. Sampler coordinates and SMA drainage area are updated in Attachment 4.

#### 94.4 Inspections and Maintenance

RG121.9 recorded two storm events at M-SMA-1 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 94-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Visual	COMP-21620	03-27-2012
Annual Erosion Evaluation	COMP-23397	03-27-2012
Storm Rain Event	BMP-25242	07-23-2012
Construction	COMP-28234	09-21-2012
Construction	COMP-28050	09-27-2012
Construction	COMP-28142	10-04-2012
Enhanced Control Measure Verification	BMP-28341	10-10-2012
Storm Rain Event	BMP-28699	10-22-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 94-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-28341	Installed new gabion M00107010008.	10-10-2012	0 day(s)	Maintenance conducted upon inspection.

#### 94.5 Compliance Status

The Sites associated with M-SMA-1 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 94-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 03-050(a)	Corrective Action Initiated	Enhanced Control Corrective Action Monitoring	Initiated 11-27-2012
SWMU 03-054(e)	Corrective Action Initiated	Enhanced Control Corrective Action Monitoring	Initiated 11-27-2012



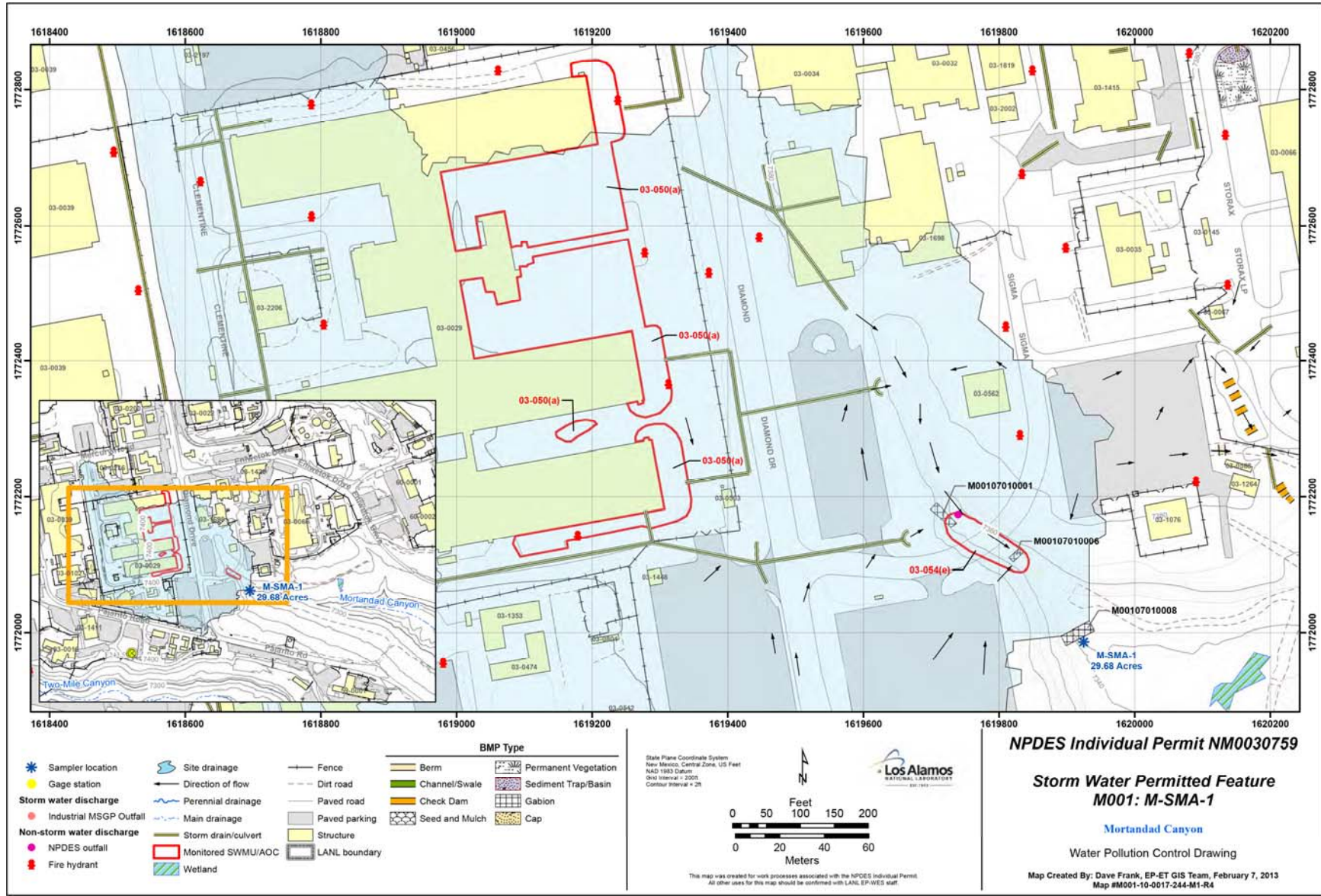
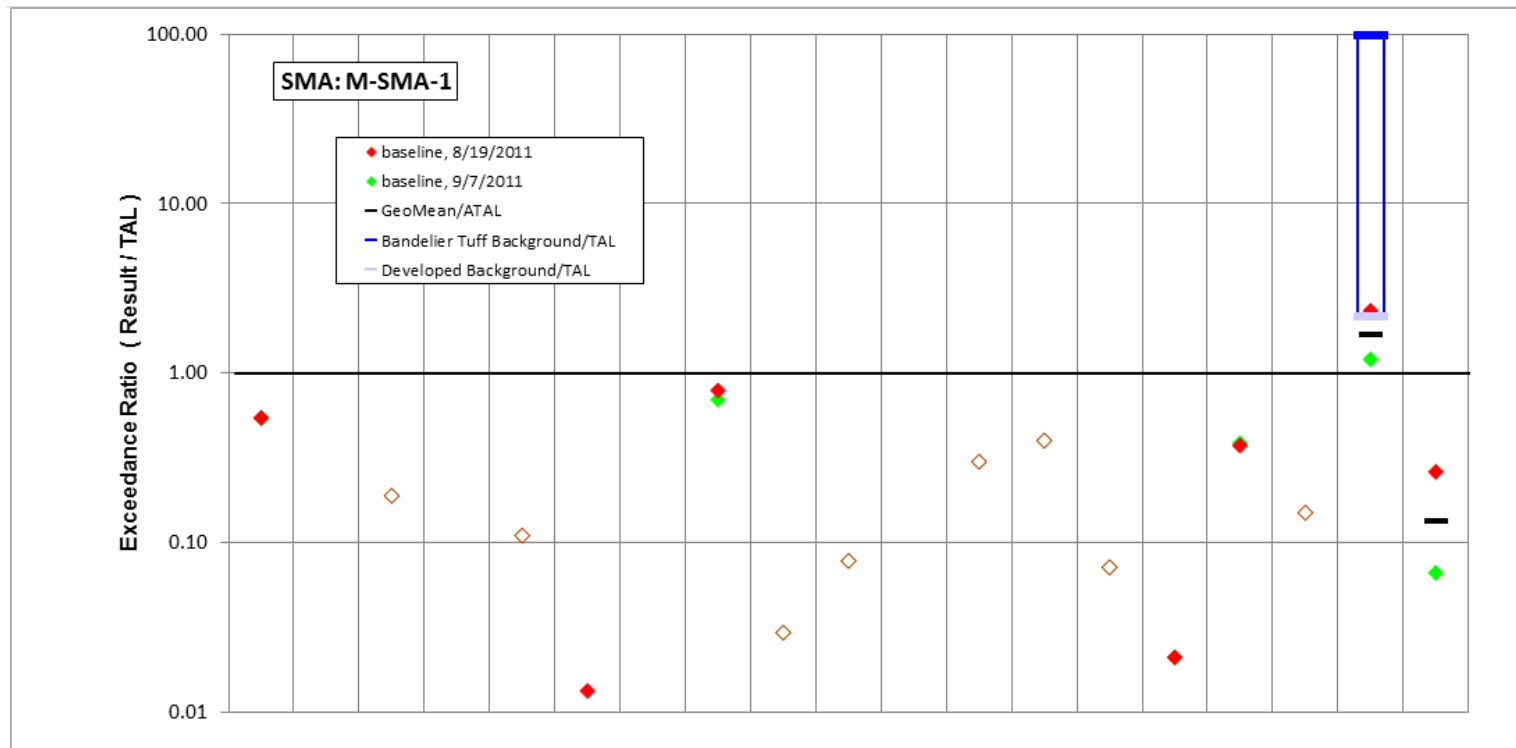


Figure 94-1 M-SMA-1 location map

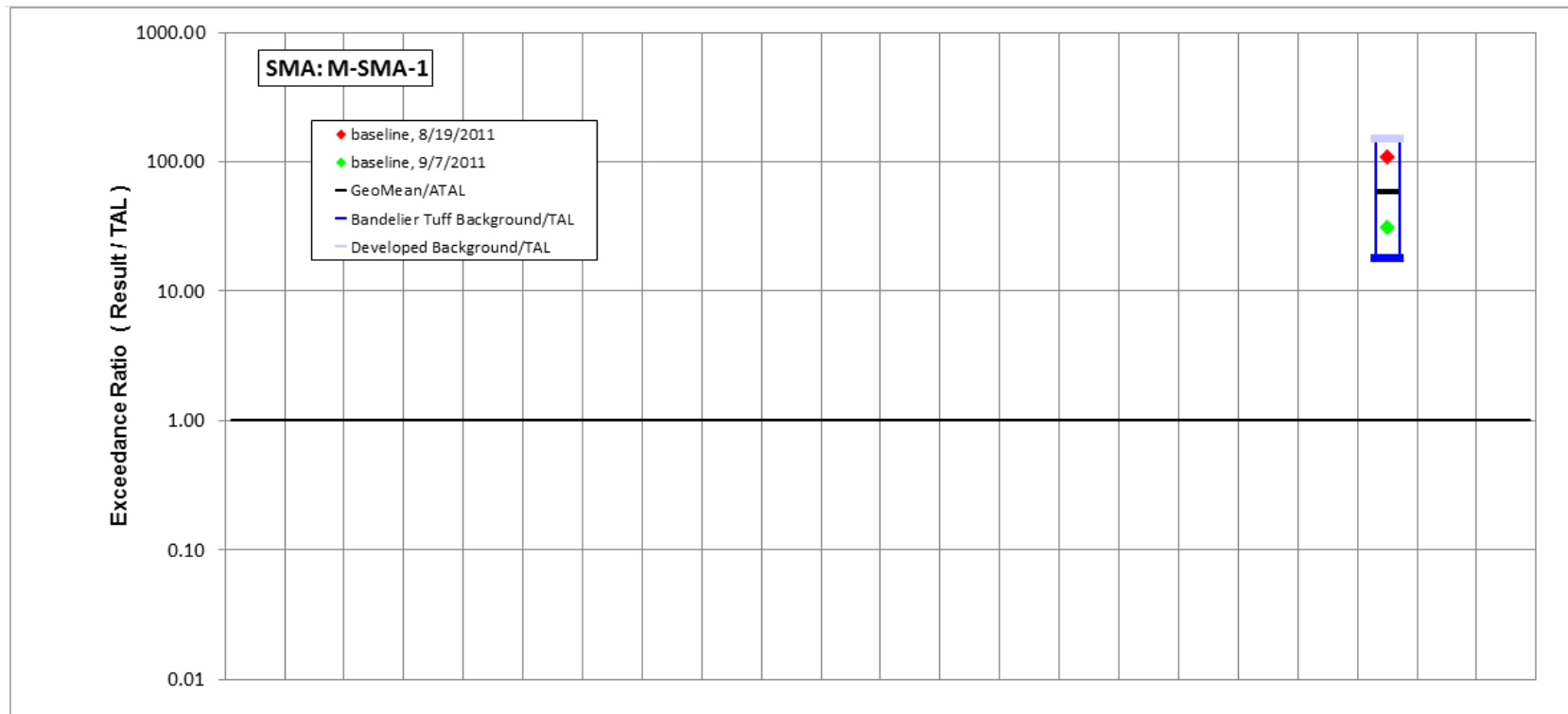


	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	<b>Gross alpha</b>	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
<b>9/7/2011 result</b>	407	<i>1</i>	1.7	15	<i>0.11</i>	2	3	3	0.5	<i>0.06</i>	0.65	1.5	0.2	<i>0.45</i>	2.1	16.2	<b>0.002</b>	<b>18.1</b>	1.99
result / TAL	0.54	<i>0.002</i>	<i>0.19</i>	<i>0.003</i>	<i>0.11</i>	<i>0.01</i>	0.003	0.7	<i>0.029</i>	<i>0.078</i>	0.0038	0.3	0.4	<i>0.071</i>	0.021	0.39	<i>0.15</i>	<b>1.2</b>	0.066
<b>8/19/2011 result</b>	408	<i>1</i>	1.7	15	<i>0.11</i>	2.8	2.1	3.4	0.5	<i>0.06</i>	1	1.5	0.2	<i>0.45</i>	2.1	15.7	<b>0.002</b>	<b>35</b>	7.84
result / TAL	0.54	<i>0.002</i>	<i>0.19</i>	<i>0.003</i>	<i>0.11</i>	<i>0.013</i>	0.0021	0.79	<i>0.029</i>	<i>0.078</i>	0.0059	0.3	0.4	<i>0.071</i>	0.021	0.37	<i>0.15</i>	<b>2.3</b>	0.26

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

**Figure 94-2 Inorganic analytical results summary plot for M-SMA-1**





	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	Total PCB	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	-	-
std value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6E-04	-	-
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
<b>9/7/2011 result</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>0.02</b>	-	-
<b>result / TAL</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>31</b>	-	-
<b>8/19/2011 result</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>0.07</b>	-	-
<b>result / TAL</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>110</b>	-	-

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 94-3 Organic analytical results summary plot for M-SMA-1

**95.0 M-SMA-1.2: SWMU 03-049(a)**

**95.1 Site Descriptions**

One historical industrial activity area is associated with M002, M-SMA-1.2: Site 03-049(a).

SWMU 03-049(a) is a currently permitted NPDES outfall (03A022) located south of the Sigma Building (03-0066). The outfall formerly discharged treated cooling water from a former cooling tower (structure 03-0127), which served the Sigma Building, and continues to discharge runoff from six roof drains on the Sigma Building. The cooling tower operated from 1960 to 1999. From 1984 to 1990, the outfall also received discharge from rinse tanks associated with the electroplating operation in the Sigma Building. The tanks contained the final rinse from electroplating and surface-finishing experimental components. Although the rinse tanks were flushed continually with tap water to reduce contaminant buildup, trace amounts of metals, acids, cyanide, and depleted uranium were introduced into the rinse water. The NPDES permit allowed discharge of 4680 gal./d of treated cooling water and 24,000 gal./d of electroplating rinse water. Between 1990 and 1999, the outfall received treated cooling water and roof-drain runoff. The outfall currently discharges roof-drain runoff to upper Mortandad Canyon.

The project map (Figure 95-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

**95.2 Control Measures**

Run-on results from overland sheet flow, an unpaved access road, and the permitted outfall associated with 03-049(a). Significant run-on to the Permitted Feature occurs from the storm drain and paved areas above the area. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 95-1).

**Table 95-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M00202010001	Established Vegetation - Grasses and Shrubs			X		CB
M00202020002	Established Vegetation - Forested/Needle Cast			X		CB
M00204060008	Channel/Swale - Riprap	X		X		CB
M00206010003	Check Dam - Rock		X		X	CB
M00206010004	Check Dam - Rock		X		X	CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

**95.3 Storm Water Monitoring**

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at M-SMA-1.2. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

**95.4 Inspections and Maintenance**

RG121.9 recorded two storm events at M-SMA-1.2 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 95-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23398	05-29-2012
Storm Rain Event	BMP-25243	07-20-2012
Storm Rain Event	BMP-28700	10-22-2012

There were no maintenance activities conducted at M-SMA-1.2 in 2012.

**95.5 Compliance Status**

The Site associated with M-SMA-1.2 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 95-3 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 03-049(a)	Baseline Monitoring	Baseline Monitoring Extended	No Comment



M-SMA-1.2, Permanent Vegetation Grasses and Shrubs, M00202020002 (photo ID 7495-3)

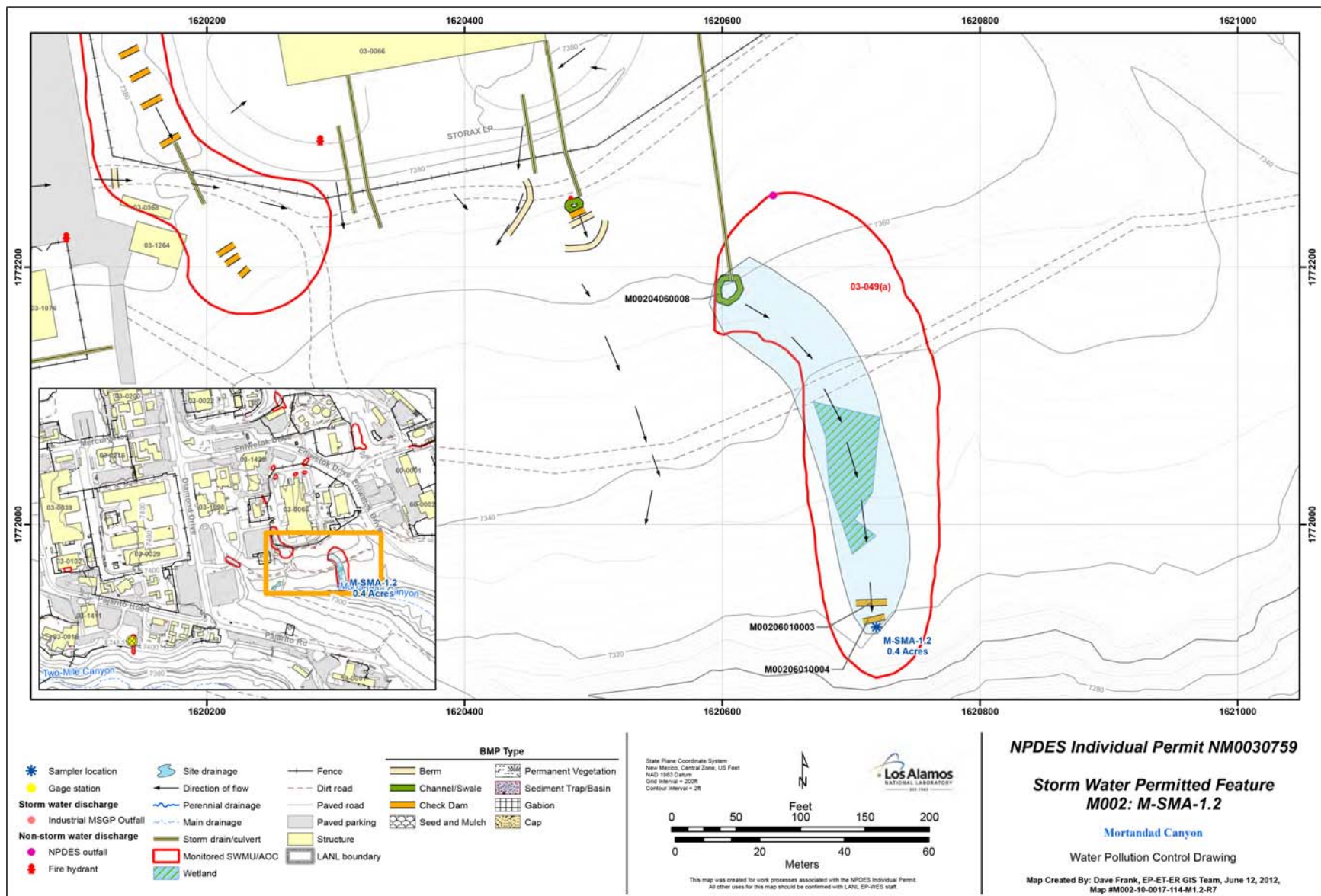


Figure 95-1 M-SMA-1.2 location map



**96.0 M-SMA-1.21: SWMU 03-049(e)**

**96.1 Site Descriptions**

One historical industrial activity area is associated with M002A, M-SMA-1.21: Site 03-049(e).

SWMU 03-049(e) is identified in the 1990 SWMU Report as an area located south of the Sigma Building (03-0066) that was potentially contaminated by an outfall pipe of unknown origin. The 1990 SWMU Report also states that the outfall discharged to Mortandad Canyon. Subsequent investigation of the Sigma Building determined that three of the building’s roof drains connect to a single pipe and discharge to the outfall area of SWMU 03-049(e).

The project map (Figure 96-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

**96.2 Control Measures**

Run-on from the storm drain and culvert converges with the channel created from outfall from 03-049(e). A berm diverts culvert run-on to the west of the SMA and the outfall associated with SWMU 03-049(e). SWMU 03-049(e) is the outfall, which captures roof drainage associated with building 03-0066. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 96-1).

**Table 96-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M002A02010001	Established Vegetation - Grasses and Shrubs			X		CB
M002A03010006	Berms - Earthen		X		X	B
M002A03020002	Berms - Base Course	X			X	CB
M002A03120005	Berms - Rock		X		X	CB
M002A04060003	Channel/Swale - Riprap		X	X		CB
M002A06010004	Check Dam - Rock		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

**96.3 Storm Water Monitoring**

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at M-SMA-1.21. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.



**96.4 Inspections and Maintenance**

RG121.9 recorded two storm events at M-SMA-1.21 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 96-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23399	05-29-2012
Storm Rain Event	BMP-25244	07-20-2012
Storm Rain Event	BMP-28701	10-22-2012

There were no maintenance activities conducted at M-SMA-1.21 in 2012.

**96.5 Compliance Status**

The Site associated with M-SMA-1.21 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 96-3 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 03-049(e)	Baseline Monitoring	Baseline Monitoring Extended	No Comment



M-SMA-1.21, Permanent Vegetation Grasses and Shrubs, M00202010001 (photo ID 7494-4)

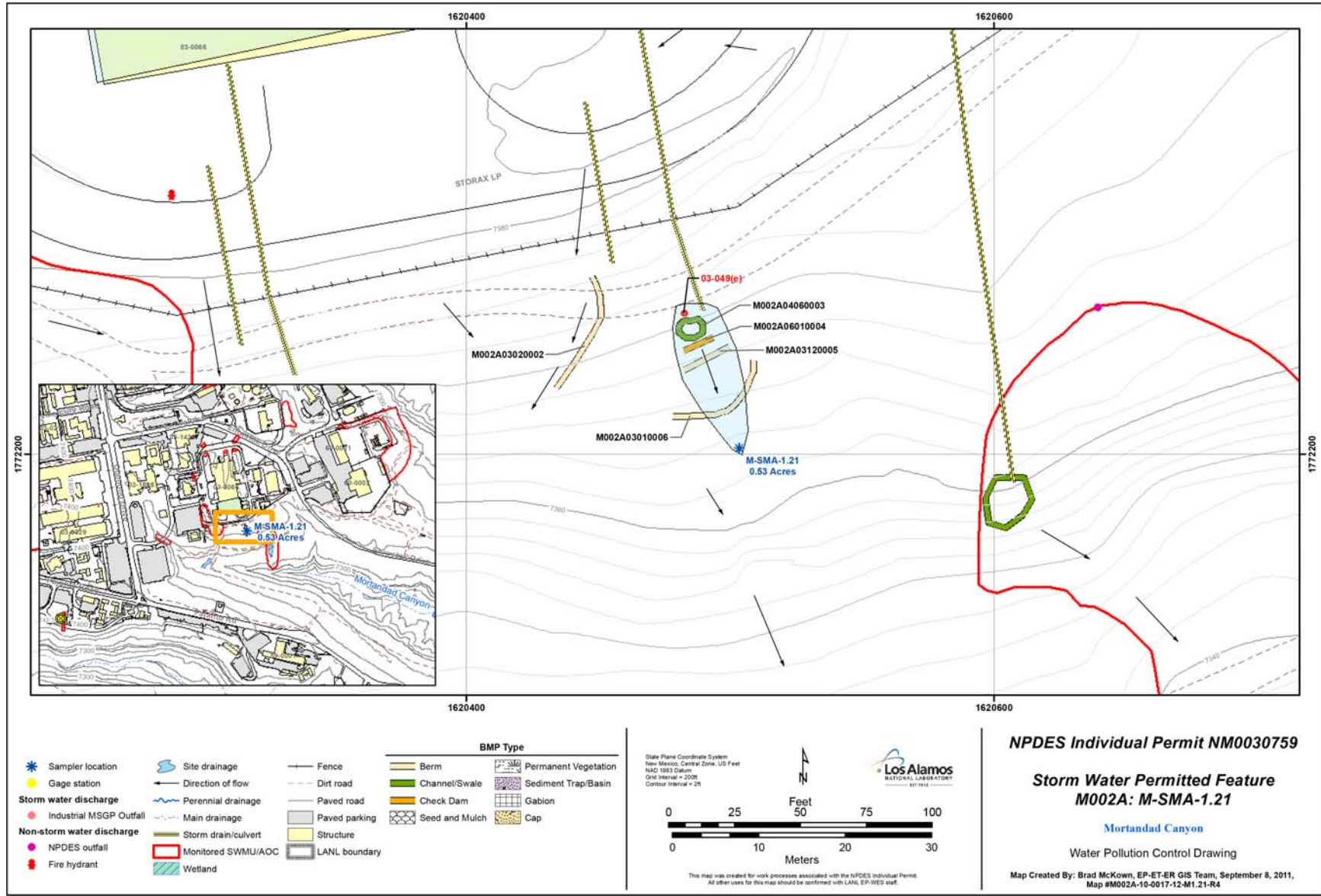


Figure 96-1 M-SMA-1.21 location map

## 97.0 M-SMA-1.22: SWMU 03-045(h)

### 97.1 Site Descriptions

One historical industrial activity area is associated with M002B, M-SMA-1.22: Site 03-045(h).

SWMU 03-045(h) consists of a formerly permitted outfall (EPA 03A024) that discharged treated cooling water from a cooling tower (structure 03-187) at TA-03. The outfall discharged to a storm drain located at the north perimeter of the TA-03 Sigma Complex security fence, approximately 50 ft north of the cooling tower. The drainage continued northeast and joined a channel north of Eniwetok Drive, which ultimately drained into Sandia Canyon. The drainage received storm water runoff from surrounding areas. Routine cooling water treatment began in 1968. Treatment included biocides and fungicides to reduce algae growth and chelating agents to inhibit corrosion. The cooling tower outlet pipe was active from 1953 to the late 1980s. The pipe was reactivated in early 1995 and remained active until it was plugged in February 1997. The outfall was removed from the NPDES permit in 1997. Potential contaminants associated with industrial materials historically managed at this Site are naturally occurring inorganic chemicals concentrated in cooling tower blowdown and conditioning chemicals added to the cooling water.

The project map (Figure 97-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 97.2 Control Measures

Run-on enters the area from the storm drain and culvert. Significant run-on flows to the Permitted Feature from the storm drain and paved areas above the area. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 97-1).

**Table 97-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M002B02010001	Established Vegetation - Grasses and Shrubs			X		CB
M002B04050002	Channel/Swale - Water Bar	X		X		CB
M002B06010003	Check Dam - Rock		X		X	CB
M002B06010004	Check Dam - Rock		X		X	CB
M002B06010005	Check Dam - Rock		X		X	CB
M002B06010006	Check Dam - Rock		X		X	CB
M002B06010007	Check Dam - Rock		X		X	CB
M002B06010008	Check Dam - Rock		X		X	CB
M002B06010009	Check Dam - Rock		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

Enhanced control measures will be installed in the second quarter of 2013 as part of corrective action.



### 97.3 Storm Water Monitoring

SWMU 03-045(h) is monitored within M-SMA-1.22. Following the installation of baseline control measures, a baseline storm water sample was collected on September 15, 2011 (Figure 97-2). Analytical results from this sample yielded two TAL exceedances:

- Aluminum concentration of 904 µg/L (MTAL is 750 µg/L), and
- Copper concentration of 6 µg/L (MTAL is 4.3 µg/L).

These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

*SWMU 03-045(h)*: Potential contaminants associated with industrial materials historically managed at this Site are naturally occurring inorganic chemicals concentrated in cooling tower blowdown and conditioning chemicals added to the cooling water.

- Aluminum—Aluminum was detected at a maximum concentration 2.0 times BV in soil samples collected during the 2009 Consent Order investigation.
- Copper—Copper was detected at a maximum concentration 2.2 times BV in soil samples collected during the 2009 Consent Order investigation.



M-SMA-1.22, Rock Check Dam,  
M002 B06010003 (photo ID 12125-3)

In summary, aluminum and copper may be associated with industrial materials historically managed at the Site. Aluminum and copper were detected above BVs infrequently (i.e., in approximately 25% of samples), and maximum concentrations were only slightly above BV. Based on previous sampling results, the Site is an unlikely source of aluminum and copper above MTALs in storm water.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figure 97-2. UTLs developed for urban settings were derived from runoff from developed landscapes on the Pajarito Plateau, including buildings, parking lots, roads, and associated features, and are labeled “Developed Background” in Figure 97-2.

Monitoring location M-SMA-1.22 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as from landscape consisting of Bandelier Tuff sediment. Metals including copper and aluminum are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff.

- Aluminum—The aluminum UTL from developed urban landscape storm water run-on is 245 µg/L; the aluminum UTL for storm water containing sediments derived from Bandelier Tuff is 2210 µg/L. The aluminum result from 2011 is between these values.

- Copper—The copper UTL from developed urban landscape storm water run-on is 32.3 µg/L; the copper UTL for storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L. The copper result from 2011 is between these two values.

All the analytical results for these samples are reported in the 2011 Annual Report.

#### 97.4 Inspections and Maintenance

RG121.9 recorded two storm events at M-SMA-1.22 during the 2012 season. These rain events triggered two post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 97-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Visual	COMP-21621	03-27-2012
Annual Erosion Evaluation	COMP-23400	03-27-2012
Storm Rain Event	BMP-25245	07-23-2012
Storm Rain Event	BMP-28702	10-22-2012
Construction	COMP-29857	11-16-2012

There were no maintenance activities conducted at M-SMA-1.22 in 2012.

#### 97.5 Compliance Status

The Site associated with M-SMA-1.22 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 97-3 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 03-045(h)	Baseline Monitoring	Corrective Action Initiated	Initiated 05-01-2012



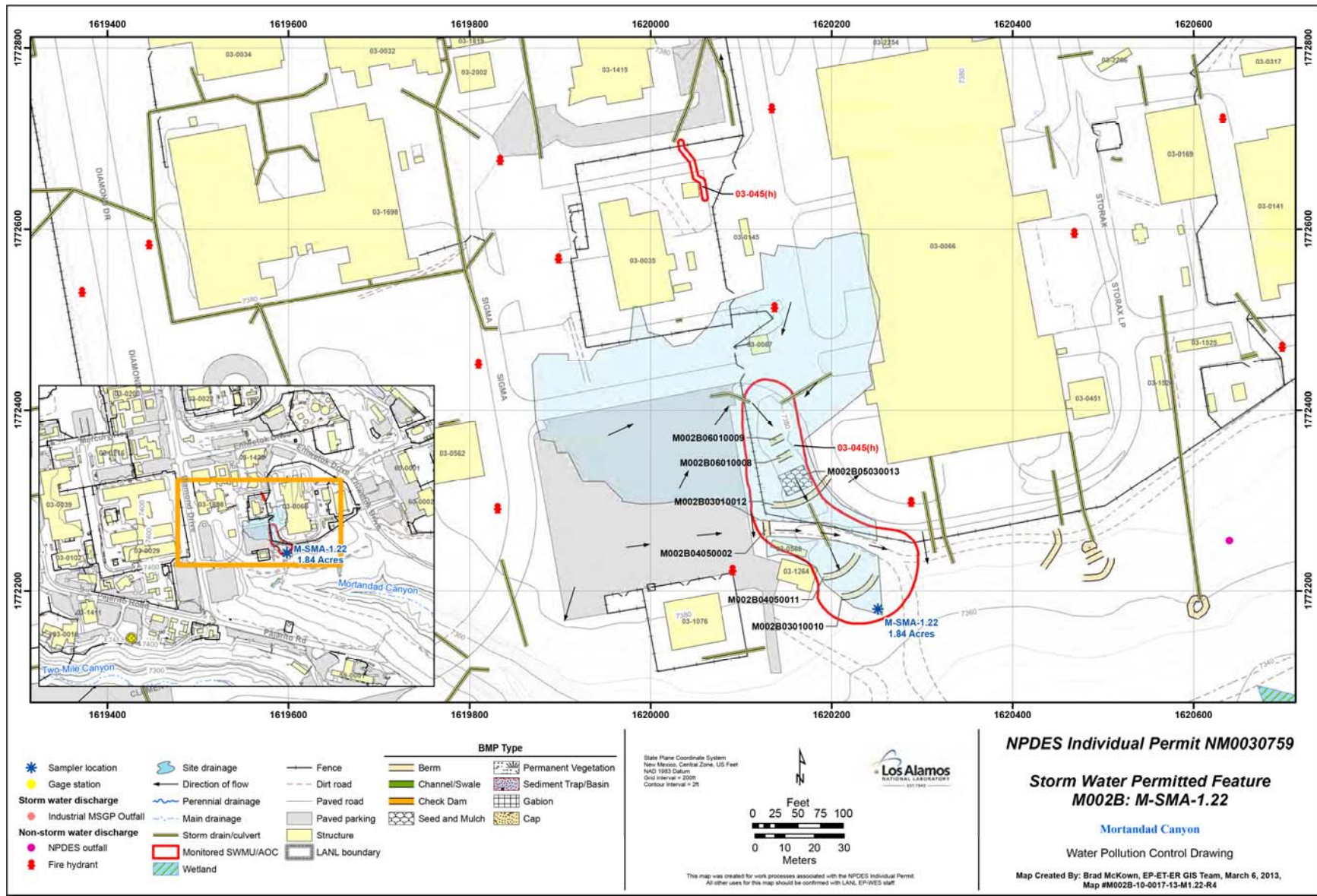
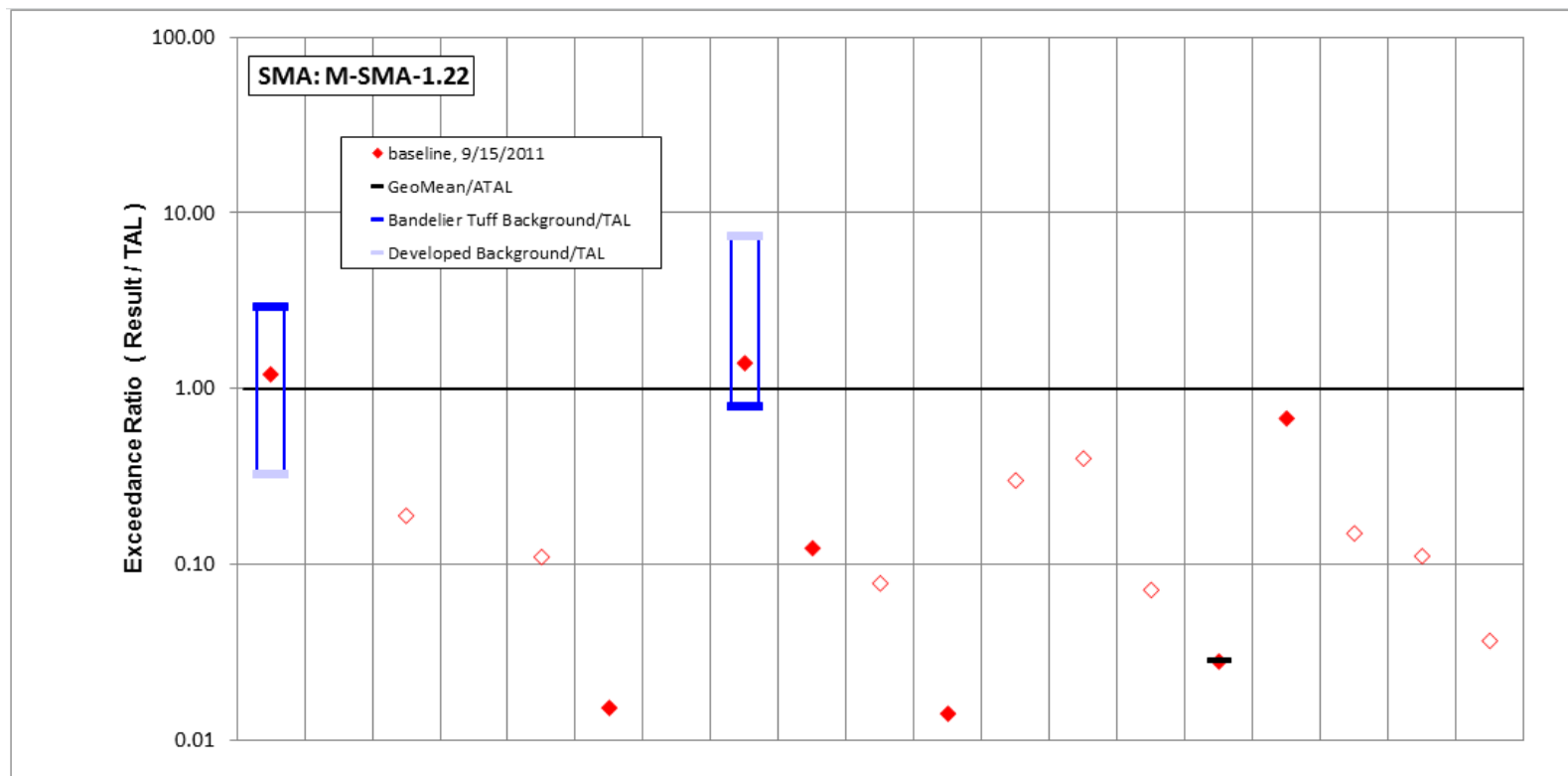


Figure 97-1 M-SMA-1.22 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	Gross alpha	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
9/15/2011 result	<b>904</b>	<i>1</i>	1.7	15	<i>0.11</i>	3.2	4.1	<b>6</b>	2.1	<i>0.06</i>	2.4	1.5	0.2	0.45	2.8	28.4	<i>0.002</i>	1.67	1.1
result / TAL	<b>1.2</b>	<i>0.002</i>	0.19	0.003	<i>0.11</i>	0.015	0.0041	<b>1.4</b>	0.12	<i>0.078</i>	0.014	0.3	0.4	0.071	0.028	0.68	0.15	0.11	0.037

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 97-2 Inorganic analytical results summary plot for M-SMA-1.22

## 98.0 M-SMA-3: SWMUs 48-005 and 48-007(c) and AOC 48-001

### 98.1 Site Descriptions

Three historical industrial activity areas are associated with M003, M-SMA-3: Sites 48-001, 48-005, and 48-007(c).

SWMU 48-005 consists of segments of inactive RLW lines at TA-48 and an associated outfall. From 1957 to 1965, these waste lines were part of the system used to convey RLW from TA-48 to the WWTP plant at TA-45 (Consolidated Unit 45-001-00). These lines, located at depths of 10 to 11 ft below ground surface (bgs), were not removed because they lie beneath structures, roadways, or utilities. Beginning in 1963, new waste lines were installed to carry wastes to the new treatment facilities at TA-50. By 1967, the waste lines leading to TA-45 were decommissioned but remained in place. Some of the waste lines were removed in two campaigns conducted in 1981 and 1984. SWMU 48-005 contains the remaining portions of waste lines, which are all inside the TA-48 security fence, as well as an outfall on the edge of Mortandad Canyon north of building 48-1. The remaining waste lines are all 3-in.-diameter cast-iron pipe and consist of a 200-ft section of Line 34 running west from building 48-1, a 300-ft section of Line 36 running south from the north wing of building 48-1, and a 50-ft section of Line 38 running south from building 48-1. The remaining sections of Lines 34 and 36 were surveyed for radioactivity during line-removal activities. Line 34 was found to have low levels of alpha activity, and Line 36 had no detectable activity. The remaining portion of Line 38 was not surveyed. The outfall portion of SWMU 48-005 received discharge from Line 37, which was connected to sumps in the north basement of building 48-1. The sumps and Line 37 were completely removed in 1981. Potential contaminants associated with industrial materials historically managed at this Site are radionuclides.



M-SMA-3, Rock Berm,  
M00303120009 (photo ID 13418-1)

SWMU 48-007(c) is an outfall that previously received discharges from nine floor drains, a trench drain, and six roof drains at building 48-0001. This outfall is located north of building 48-0001 and discharges into Mortandad Canyon. Former sources of discharge to the floor drains included floor washings, backflow preventers, drainage and condensate from a vacuum pump, steam condensate, a boiler drain, a fire drain, and a water-heater pressure-relief valve. This outfall previously operated as an NPDES-permitted outfall (131 EPA 04A) but was removed from the NPDES permit on January 14, 1998, because industrial wastewater discharges were discontinued. Currently, this outfall receives only storm water.

AOC 48-001 consists of the air exhaust system at the main radiochemistry laboratory (building 48-1) at TA-48. Building 48-1 was constructed in 1957 and was used to analyze samples collected from nuclear weapons tests. Currently, radiochemical analyses are conducted at building 48-1 to support a variety of programs. The building's exhaust system consists of nine stacks. Three stacks exhaust unfiltered discharges from chemical hoods, three stacks are associated with combustion boilers, one stack exhausts individually filtered glove boxes, one stack exhausts filtered air from hot cell laboratories, and one stack exhausts air from a welding and degreasing booth. Discharges from the chemical hoods are not filtered because the chemicals used in the hoods (e.g., perchloric acid) degrade filters. However,

these hoods are equipped with wet scrubbers. The glove box stack (stack FE54) is permitted and monitored under the National Emissions Standards for Hazardous Air Pollutants Program of the Clean Air Act. Potential contaminants associated with industrial materials historically managed at this Site are radionuclides.

The project map (Figure 98-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 98.2 Control Measures

Run-on enters this Permitted Feature from the paved access road and parking areas above the sampler. Flow from the access road intersects the SMA and discharges off the mesa west of the SMA boundary. A riprap below the 24-in. culvert serves as outlet protection. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 98-1).

**Table 98-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M00302010003	Established Vegetation - Grasses and Shrubs			X		CB
M00303120009	Berms - Rock	X			X	CB
M00303120010	Berms - Rock	X			X	CB
M00303120011	Berms - Rock	X			X	CB
M00304050005	Channel/Swale - Water Bar	X		X		CB
M00304060001	Channel/Swale - Riprap		X	X		CB
M00304060008	Channel/Swale - Riprap	X		X		CB
M00305020012	Sediment Traps and Basins - Sediment Basin	X			X	CB
M00306010007	Check Dam - Rock		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 98.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at M-SMA-3. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 98.4 Inspections and Maintenance

RG-TA-06 recorded four storm events at M-SMA-3 during the 2012 season. These rain events triggered four post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.



**Table 98-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23406	05-29-2012
Storm Rain Event	BMP-25223	07-20-2012
Storm Rain Event	BMP-27507	09-12-2012
Storm Rain Event	BMP-28178	10-03-2012
Storm Rain Event	BMP-28623	10-18-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 98-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-29046	Added more rock to riprap on the west side of M00304060008 to cover low spot.	10-30-2012	12 day(s)	Maintenance conducted in timely manner.

### 98.5 Compliance Status

The Sites associated with M-SMA-3 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 98-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
AOC 48-001	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 48-005	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 48-007(c)	Baseline Monitoring	Baseline Monitoring Extended	No Comment



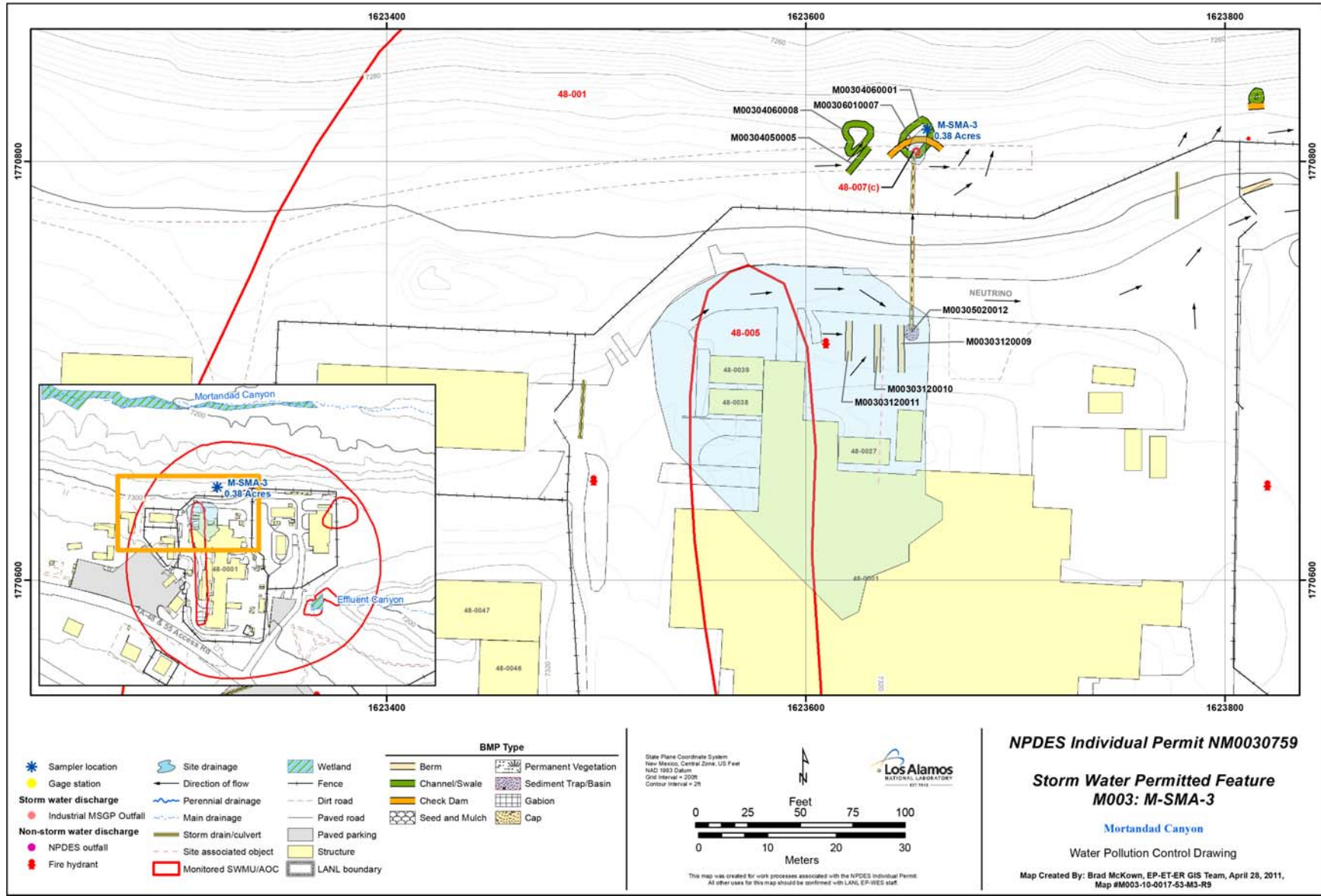


Figure 98-1 M-SMA-3 location map

## 99.0 M-SMA-3.1: SWMU 48-007(b) and AOC 48-001

### 99.1 Site Descriptions

Two historical industrial activity areas are associated with M004, M-SMA-3.1: Sites 48-001 and 48-007(b). SWMU 48-007(b) is an outfall that formerly discharged noncontact cooling water used to cool a magnet and laser housed in the main radiochemistry laboratory (building 48-0001). This outfall is located north of building 48-0001 and formerly discharged up to 4300 gal./d of cooling water. Water discharged from the outfall flowed into Mortandad Canyon. This outfall formerly operated as an NPDES-permitted outfall (016 EPA 04A) but was removed from the NPDES permit on September 19, 1997, because industrial wastewater discharges were discontinued. Presently, the outfall receives only storm water.

AOC 48-001 consists of the air-exhaust system at the main radiochemistry laboratory (building 48-1) at TA-48. Building 48-1 was constructed in 1957 and was used to analyze samples collected from nuclear weapons tests. Currently, radiochemical analyses are conducted at building 48-1 to support a variety of programs. The building's exhaust system consists of nine stacks. Three stacks exhaust unfiltered discharges from chemical hoods, three stacks are associated with combustion boilers, one stack exhausts individually filtered glove boxes, one stack exhausts filtered air from hot cell laboratories, and one stack exhausts air from a welding and degreasing booth. Discharges from the chemical hoods are not filtered because the chemicals used in the hoods (e.g., perchloric acid) degrade filters. However, these hoods are equipped with wet scrubbers. The glove box stack (stack FE54) is permitted and monitored under the National Emissions Standards for Hazardous Air Pollutants Program of the Clean Air Act. Potential contaminants associated with industrial materials historically managed at this Site are radionuclides.

The project map (Figure 99-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 99.2 Control Measures

A significant run-on source at this Permitted Feature occurs in the form of a 5-in. pipe located at the outfall. The existing curb along the northern edge of the paved access road above the area prevents run-on from the road and other parking areas. There are no run-on impacts from access roads at this SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 99-1).

**Table 99-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M00402010001	Established Vegetation - Grasses and Shrubs			X		CB
M00403040006	Berms - Asphalt	X			X	CB
M00404060005	Channel/Swale - Riprap		X	X		CB
M00406010004	Check Dam - Rock		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 99.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at M-SMA-3.1. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 99.4 Inspections and Maintenance

RG-TA-06 recorded four storm events at M-SMA-3.1 during the 2012 season. These rain events triggered three post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 99-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23407	05-29-2012
Storm Rain Event	BMP-25224	07-20-2012
Storm Rain Event	BMP-27508	09-12-2012
Storm Rain Event	BMP-28179	10-03-2012
Storm Rain Event	BMP-28624	10-18-2012

There were no maintenance activities conducted at M-SMA-3.1 in 2012.

### 99.5 Compliance Status

The Sites associated with M-SMA-3.1 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 99-3 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
AOC 48-001	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 48-007(b)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

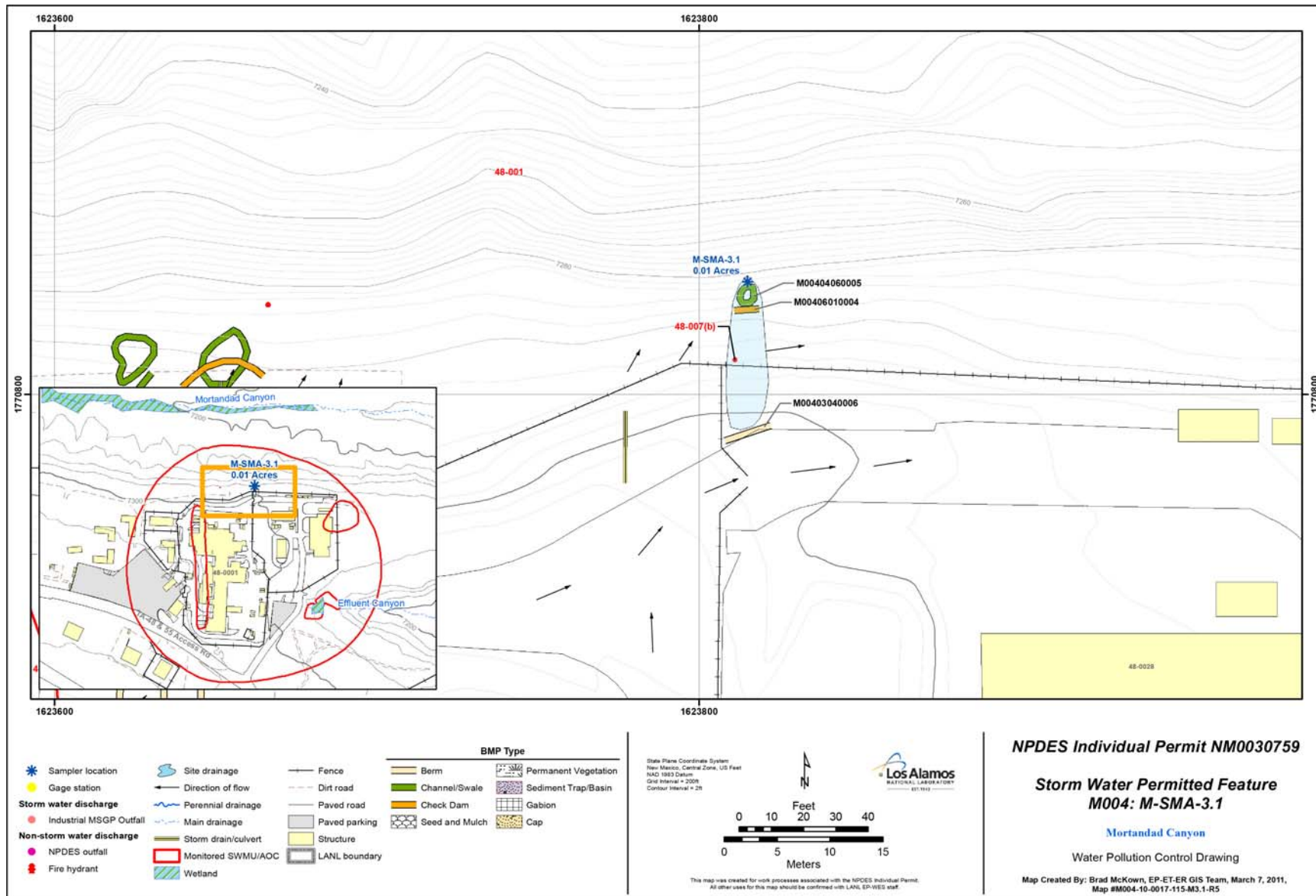


Figure 99-1 M-SMA-3.1 location map

## **100.0 M-SMA-3.5: SWMU 48-003 and AOC 48-001**

### **100.1 Site Descriptions**

Two historical industrial activity areas are associated with M005, M-SMA-3.5: Sites 48-001 and 48-003.

SWMU 48-003 consists of a former septic system that served TA-48 from 1957 to 1986. This septic system consisted of a septic tank (former structure 48-0005), a dosing chamber, a filter bed (former structure 48-0006), and an outfall that discharged into Mortandad Canyon. The septic tank and dosing chamber were 21 ft 7 in. long, and the filter bed measured 81 ft 2 in. long × 40 ft 7 in. wide. The septic system operated until 1986, at which time the septic tank and filter bed were decommissioned and removed. A laboratory and diagnostics facility (building 48-0045) was constructed over the site of the septic tank and filter bed. After the septic system was decommissioned, sanitary wastewater from TA-48 was sent to the sanitary lagoons at TA-35 and later to the consolidated treatment plant at TA-46. Although this septic system primarily received sanitary wastewater from TA-48 facilities, the system reportedly received hazardous and radioactive materials through accidental discharges.

AOC 48-001 consists of the air exhaust system at the main radiochemistry laboratory (building 48-1) at TA-48. Building 48-1 was constructed in 1957 and was used to analyze samples collected from nuclear weapons tests. Currently, radiochemical analyses are conducted at building 48-1 to support a variety of programs. The building's exhaust system consists of nine stacks. Three stacks exhaust unfiltered discharges from chemical hoods, three stacks are associated with combustion boilers, one stack exhausts individually filtered glove boxes, one stack exhausts filtered air from hot cell laboratories, and one stack exhausts air from a welding and degreasing booth. Discharges from the chemical hoods are not filtered because the chemicals used in the hoods (e.g., perchloric acid) degrade filters. However, these hoods are equipped with wet scrubbers. The glove box stack (stack FE54) is permitted and monitored under the National Emissions Standards for Hazardous Air Pollutants Program of the Clean Air Act. Potential contaminants associated with industrial materials historically managed at this Site are radionuclides.

The project map (Figure 100-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

The Site boundary for SWMU 48-003 has been modified to match the boundary depicted in the administrative record for the Consent Order, which is the controlling authority for SWMU and AOC boundary definitions used in the IP. The Site boundary change was minor and did not affect the SMA boundary or sampler location. The updated boundary is shown on the project map (Figure 100-1) and the Site physical characteristic information listed in Attachment 4 has been updated.

### **100.2 Control Measures**

The roof drain from building 48-0045 has caused a gully that carries run-on to the SMA. Some sheet flow from the sparsely vegetated and bedrock exposed area southeast of the sampler. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 100-1).



**Table 100-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M00502010001	Established Vegetation - Grasses and Shrubs			X		CB
M00503010015	Berms - Earthen		X		X	CB
M00503010016	Berms - Earthen		X		X	CB
M00503120009	Berms - Rock		X		X	CB
M00503120010	Berms - Rock		X		X	CB
M00503120013	Berms - Rock	X			X	CB
M00503120014	Berms - Rock	X			X	CB
M00504060011	Channel/Swale - Riprap	X		X		CB
M00504060012	Channel/Swale - Riprap	X		X		CB
M00504060017	Channel/Swale - Riprap		X	X		CB
M00506010004	Check Dam - Rock	X			X	CB
M00506010005	Check Dam - Rock	X			X	CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

**100.3 Storm Water Monitoring**

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at M-SMA-3.5. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

**100.4 Inspections and Maintenance**

RG200.5 recorded one storm event at M-SMA-3.5 during the 2012 season. These rain events triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 100-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23408	05-29-2012
Storm Rain Event	BMP-28719	10-18-2012

There were no maintenance activities conducted at M-SMA-3.5 in 2012.

**100.5 Compliance Status**

The Site associated with M-SMA-3.5 is a high priority Site. Corrective action is to be certified complete within 3 yr of the effective date of the IP (i.e., November 2015).

**Table 100-3 Compliance Status during 2012**

<b>Site</b>	<b>Compliance Status on Jan 1, 2012</b>	<b>Compliance Status on Dec 31, 2012</b>	<b>Comments</b>
AOC 48-001	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 48-003	Baseline Monitoring	Baseline Monitoring Extended	No Comment

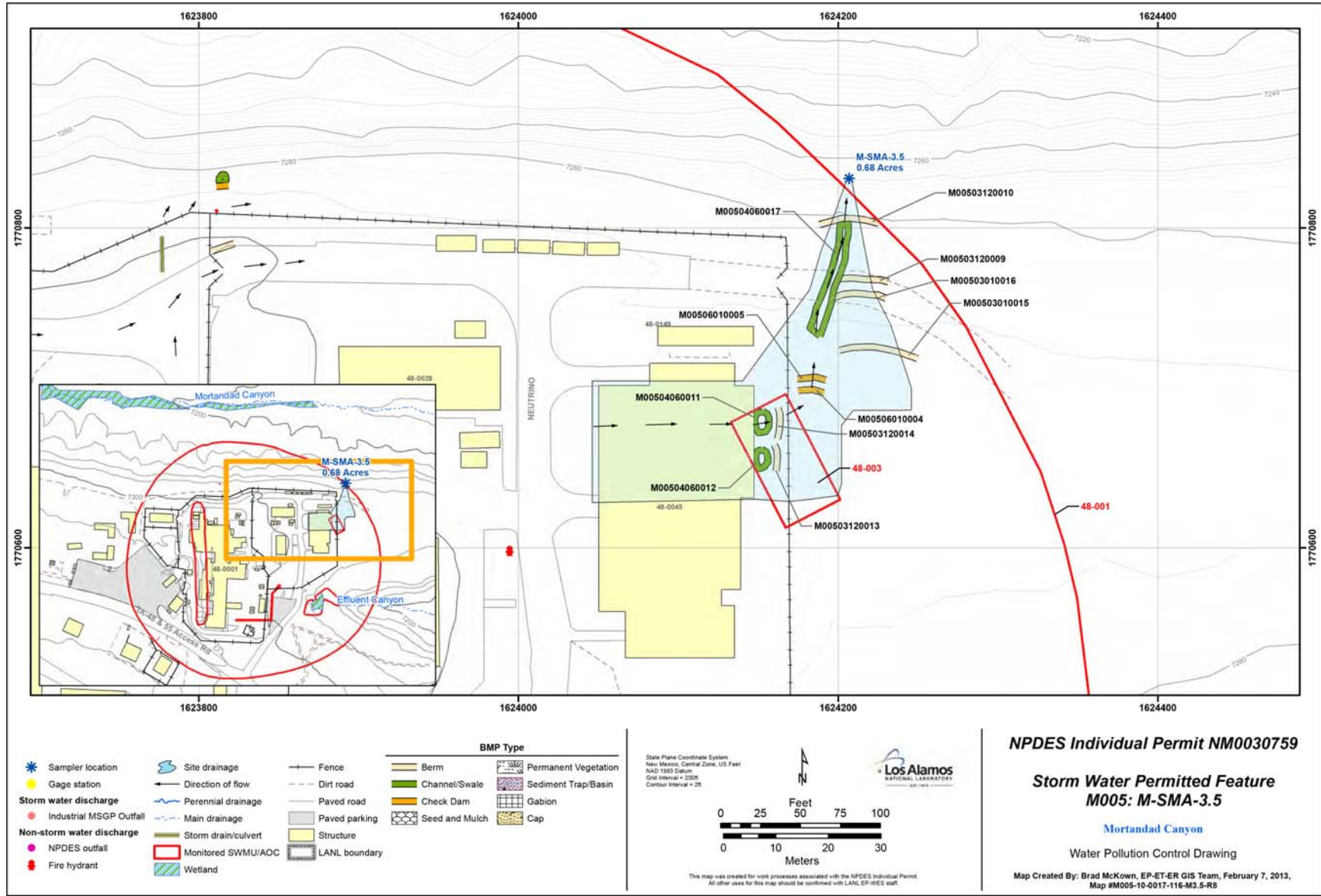


Figure 100-1 M-SMA-3.5 location map

## **101.0 M-SMA-4: SWMUs 48-005, 48-007(a), 48-007(d), and 48-010 and AOC 48-001**

### **101.1 Site Descriptions**

Five historical industrial activity areas are associated with M006, M-SMA-4: Sites 48-001, 48-005, 48-007(a), 48-007(d), and 48-010.

SWMU 48-005 consists of segments of inactive RLW lines at TA-48 and an associated outfall. From 1957 to 1965, these waste lines were part of the system used to convey RLW from TA-48 to the WWTP plant at TA-45 (Consolidated Unit 45-001-00). These lines, located at depths of 10 to 11 ft bgs, were not removed because they lie beneath structures, roadways, or utilities. Beginning in 1963, new waste lines were installed to carry wastes to the new treatment facilities at TA-50. By 1967, the waste lines leading to TA-45 were decommissioned but remained in place. Some of the waste lines were removed in two campaigns conducted in 1981 and 1984. SWMU 48-005 contains the remaining portions of waste lines, which are all inside the TA-48 security fence, as well as an outfall on the edge of Mortandad Canyon north of building 48-1. The remaining waste lines are all 3-in.-diameter cast-iron pipe and consist of a 200-ft section of Line 34 running west from building 48-1, a 300-ft section of Line 36 running south from the north wing of building 48-1, and a 50-ft section of Line 38 running south from building 48-1. The remaining sections of lines 34 and 36 were surveyed for radioactivity during line-removal activities. Line 34 was found to have low levels of alpha activity, and Line 36 had no detectable activity. The remaining portion of Line 38 was not surveyed. The outfall portion of SWMU 48-005 received discharge from Line 37, which was connected to sumps in the north basement of building 48-1. The sumps and Line 37 were completely removed in 1981. Potential contaminants associated with industrial materials historically managed at this Site are radionuclides.

SWMU 48-007(a) is a formerly permitted outfall (EPA 03A045/046) that received treated cooling tower blowdown from two cooling towers located on the roof of building 48-1 at TA-48. This outfall is located east of building 48-1. Up to 750 gal./h of cooling tower blowdown was discharged to the outfall. Effluent from the outfall flowed to an unlined surface impoundment, SWMU 48-010. Water used in these cooling towers was treated to control scale, corrosion, and biological growth. Additives used included Garratt Callahan (G.C.) Formula 227 L, a corrosion and scaling inhibitor, and G.C. Formula 314 T, a biocide. Specific hazardous chemicals present in these additives, if any, are not known. Approximately 60% of the water in the cooling towers was evaporated, causing the chemical additives to be concentrated in the blowdown. The outfall was removed from the NPDES permit on December 6, 1999, because industrial wastewater discharges to the outfall had been discontinued earlier in the year. Storm water continues to flow through the outfall. The lateral and vertical extent of all detected chemicals and radionuclides are defined at Consolidated Unit 48-007(a)-00. The site was found not to pose a potential unacceptable risk or dose under the industrial and residential scenarios and does not pose a potential ecological risk. In September 2010, NMED issued a COC with controls for storm water monitoring for SWMU 48-007(a). Potential contaminants associated with industrial materials historically managed at this Site are naturally occurring inorganic chemicals concentrated in cooling tower blowdown and conditioning chemicals added to the cooling water.

SWMU 48-007(d) is a formerly permitted outfall (EPA 04A153) used to discharge noncontact cooling water that cooled a vacuum pump housed in the south end of building 48-1 at TA-48. This outfall is located east of building 48-1. Up to 4000 gal./d of cooling water was discharged to the outfall. Effluent from this outfall flowed to SWMU 48-010. This outfall was removed from the NPDES permit on July 20, 1998, because industrial wastewater discharges to the outfall had been discontinued earlier in the year. Storm water continues to flow through the outfall. The lateral and vertical extent of all

detected chemicals and radionuclides are defined at SWMU 48-007(d). The site was found not to pose a potential unacceptable risk or dose under the industrial and residential scenarios and does not pose a potential ecological risk. In September 2010, NMED issued a COC with controls for storm water monitoring for SWMU 48-007(d). Industrial materials were not historically managed at this Site, which only received discharges of noncontact cooling water.

SWMU 48-010 consists of an unlined surface impoundment located at TA-48. The surface impoundment was constructed in 1978 by excavating directly into the tuff. The surface impoundment is located approximately 300 ft east of building 48-1 and 150 ft south of building 48-45. The surface impoundment previously received cooling tower blowdown discharged from SWMU 48-007(a), noncontact cooling water discharged from SWMU 49-007(d), and storm water runoff from the parking lot for building 48-0045. Currently, the impoundment receives only storm water from the parking lot. A wetland has developed around the impoundment. The impoundment and surrounding wetland cover approximately 100 ft × 150 ft. SWMU 48-010 discharges to the east into a side canyon that is a tributary to Mortandad Canyon. The lateral and vertical extent of all detected chemicals and radionuclides are defined at SWMU 48-010. The site was found not to pose a potential unacceptable risk or dose under the industrial and residential scenarios and does not pose a potential ecological risk. In September 2010, NMED issued a COC with controls for storm water monitoring for SWMU 48-010. Potential contaminants associated with industrial materials historically managed at this Site are naturally occurring inorganic chemicals concentrated in cooling tower blowdown and conditioning chemicals added to the cooling water.

AOC 48-001 consists of the air exhaust system at the main radiochemistry laboratory (building 48-1) at TA-48. Building 48-1 was constructed in 1957 and was used to analyze samples collected from nuclear weapons tests. Currently, radiochemical analyses are conducted at building 48-1 to support a variety of programs. The building's exhaust system consists of nine stacks. Three stacks exhaust unfiltered discharges from chemical hoods, three stacks are associated with combustion boilers, one stack exhausts individually filtered glove boxes, one stack exhausts filtered air from hot cell laboratories, and one stack exhausts air from a welding and degreasing booth. Discharges from the chemical hoods are not filtered because the chemicals used in the hoods (e.g., perchloric acid) degrade filters. However, these hoods are equipped with wet scrubbers. The glove box stack (stack FE54) is permitted and monitored under the National Emissions Standards for Hazardous Air Pollutants Program of the Clean Air Act. Potential contaminants associated with industrial materials historically managed at this Site are radionuclides.

The project map (Figure 101-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

The Site boundaries for SWMUs 48-007(a) and SWMU 48-007(d) have been modified to match the boundaries depicted in the administrative record for the Consent Order, which is the controlling authority for SWMU and AOC boundary definitions used in the IP. The Site boundary changes were minor and did not affect the SMA boundary or sampler location. The updated boundaries are shown on the project map (Figure 101-1) and the Site physical characteristic information listed in Attachment 4 has been updated.



### 101.2 Control Measures

Culverts located east of building 48-001 capture most of the pavement-generated run-on. The culverts discharge into the channels east of Neutrino Road and empty into the wetlands, west of the sampler. The sheet flow from the asphalt-paved TA-48 access road and asphalt-lined ditch west and unlined ditch to the east of this road flows to the culvert that empties into the wetland. The manmade swales on the north side of building 48-0107 drain into the ditch where the culvert daylight to the wetland. There is some sheet flow from south of the SMA contributes to the run-on to the wetland. Run-on from the access road flows to northeast away from the SWMU and sampler. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 101-1).

**Table 101-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M00602010003	Established Vegetation - Grasses and Shrubs			X		CB
M00602020004	Established Vegetation - Forested/Needle Cast			X		CB
M00604060002	Channel/Swale - Riprap		X	X		CB
M00604060007	Channel/Swale - Riprap	X		X		CB
M00604060012	Channel/Swale - Riprap	X		X		CB
M00606010005	Check Dam - Rock	X			X	CB
M00606010013	Check Dam - Rock	X			X	B
M00607010006	Gabions - Gabions	X		X		CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

Enhanced control measures will be installed in the second quarter of 2013 as part of corrective action.

### 101.3 Storm Water Monitoring

AOC 48-001 and SWMUs 48-005, 48-007(a), 48-007(d), and 48-010 are monitored within M-SMA-4. Following the installation of baseline control measures, a baseline storm water sample was collected on August 19, 2011 (Figures 101-2 and 101-3). Analytical results from this sample yielded three TAL exceedances:

- Copper concentration of 6 µg/L (MTAL is 4.3 µg/L),
- Radium-226 and radium-228 activity of 70.3 pCi/L (ATAL is 30 pCi/L), and
- PCB concentration of 50 ng/L (ATAL is 0.6 ng/L).

These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

*AOC 48-001:* Potential contaminants associated with industrial materials historically managed at this Site are radionuclides.

- Copper—Copper was detected at a maximum copper concentration was 12 times BV in soil samples collected during the 2009 Consent Order investigation and 1997 RFI.
- PCBs—PCBs were detected at a maximum concentration 6% of the residential SSL in Consent Order soil samples.
- Gross alpha—Consent Order and RFI samples were not analyzed for radium isotopes because radium was not identified as a potential contaminant at this Site.

In summary, copper is not known to be associated with industrial materials historically managed at the Site, but copper was detected substantially above BV. Based previous sampling results, the Site may be a source of copper above MTAL in storm water. PCBs are not known to be associated with industrial materials historically managed at the Site and were detected only at low concentrations well below residential SSLs. Based on site history and previous sampling results, the Site is an unlikely source of PCBs above ATAL in storm water. Radium-226 and radium-228 are not known to be associated with industrial materials historically managed at this Site. Based on site history, the Site is an unlikely source of radium-226 and radium-228 above ATAL in storm water.

*SWMU 48-005:* Potential contaminants associated with industrial materials historically managed at this Site are radionuclides.

- Copper—Copper was detected at a maximum copper concentration 1.6 times BV in soil samples collected during the 2009 Consent Order investigation and 1997 RFI.
- PCBs—PCBs were detected at a maximum concentration less than 1% of the residential SSL in Consent Order soil samples.
- Gross alpha—Consent Order and RFI samples were not analyzed for radium isotopes because radium was not identified as a potential contaminant at this Site.

In summary, copper is not known to be associated with industrial materials historically managed at the Site, and copper was detected only slightly above BV. PCBs are not known to be associated with industrial materials historically managed at the Site and were detected only at low concentrations well below residential SSLs. Based on site history and previous sampling results, the Site is an unlikely source of copper above MTAL and PCBs above ATAL in storm water. Radium-226 and radium-228 are not known to be associated with industrial materials historically managed at this Site. Based on site history, the Site is an unlikely source of radium-226 and radium-228 above ATAL in storm water.

*SWMU 48-007(a):* Potential contaminants associated with industrial materials historically managed at this Site are naturally occurring inorganic chemicals concentrated in cooling tower blowdown and conditioning chemicals added to the cooling water.

- Copper—Copper was detected at a maximum copper concentration 12 times BV in soil samples collected during the 2009 Consent Order investigation and 1997 RFI.
- PCBs—PCBs were detected at a maximum concentration 2% of the residential SSL in Consent Order soil samples.
- Radium—Consent Order and RFI samples were not analyzed for radium isotopes because radium was not identified as a potential contaminant at this Site.

In summary, copper may have been present in industrial materials historically managed at the Site, and copper was detected substantially above BV. Based on site history and previous sampling results, the Site may be a source of copper above MTAL in storm water. PCBs are not known to be associated with industrial materials historically managed at the Site and were detected only at low concentrations well below residential SSLs. Based on site history and previous sampling results, the Site is an unlikely source of PCBs above ATAL in storm water. Radium-226 and radium-228 are not known to be associated with industrial materials historically managed at this Site. Based on site history, the Site is an unlikely source of radium-226 and radium-228 above ATAL in storm water.

*SWMU 48-007(d)*: Industrial materials were not historically managed at this Site, which only received discharges of noncontact cooling water.

- Copper—Copper was detected at a maximum copper concentration 2.9 times BV in soil samples collected during the 2009 Consent Order investigation and 1997 RFI.
- PCBs—PCBs were detected at a maximum concentration 2% of the residential SSL in Consent Order soil samples.
- Radium—Consent Order and RFI samples were not analyzed for radium isotopes because radium was not identified as a potential contaminant at this Site.

In summary, copper may have been present in industrial materials historically managed at the Site, and copper was detected above BV. Based on site history and previous sampling results, the Site may be a source of copper above MTAL in storm water. PCBs are not known to be associated with industrial materials historically managed at the Site and were detected only at low concentrations well below residential SSLs. Based on site history and previous sampling results, the Site is an unlikely source of PCBs above ATAL in storm water. Radium-226 and radium-228 are not known to be associated with industrial materials historically managed at this Site. Based on site history, the Site is an unlikely source of radium-226 and radium-228 above ATAL in storm water.

*SWMU 48-010*: Potential contaminants associated with industrial materials historically managed at this Site are naturally occurring inorganic chemicals concentrated in cooling tower blowdown and conditioning chemicals added to the cooling water.

- Copper—Copper was detected at a maximum copper concentration 12 times BV in soil samples collected during the 2009 Consent Order investigation and 1997 RFI.
- PCBs—PCBs were detected at a maximum concentration 2% of the residential SSL in Consent Order soil samples.
- Radium—Consent Order and RFI samples were not analyzed for radium isotopes because radium was not identified as a potential contaminant at this Site.

In summary, copper may have been present in industrial materials historically managed at the Site, and copper was detected substantially above BV. Based on site history and previous sampling results, the Site may be a source of copper above MTAL in storm water. PCBs are not known to be associated with industrial materials historically managed at the Site and were detected only at low concentrations well below residential SSLs. Based on site history and previous sampling results, the Site is an unlikely source of PCBs above ATAL in storm water. Radium-226 and radium-228 are not known to be associated with industrial materials historically managed at this Site. Based on site history, the Site is an unlikely source of radium-226 and radium-228 above ATAL in storm water.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figures 101-2 and 101-3. UTLs developed for urban settings were derived from runoff from developed landscapes on the Pajarito Plateau, including buildings, parking lots, roads, and associated features, and are labeled “Developed Background” in Figures 101-2 and 101-3.

Monitoring location M-SMA-4 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as from landscape consisting of Bandelier Tuff sediment. Metals including copper are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff. PCBs are associated with building materials including paint, caulking, asphalt, solvents, transformers, and cutting oils.

- Copper—The copper UTL from developed urban landscape storm water run-on is 32.3 µg/L; the copper UTL for storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L. The copper result from 2011 is between these two values.
- Radium-226 and Radium-228—The radium-226 and radium-228 activity UTLs from developed urban landscape storm water run-on and from storm water containing sediments derived from Bandelier Tuff were not calculated because an insufficient number of detected values was available to permit calculation of the UTL value in the baseline metals background study. Thus, a comparison to storm water background levels could not be made for radium-226 and radium-228.
- PCB—The PCB UTL from developed urban landscape storm water run-on is 98 ng/L; the PCB UTL for storm water containing sediments derived from Bandelier Tuff is 11.7 ng/L. The PCB result from 2011 is between these two values.

All the analytical results for these samples are reported in the 2012 Annual Report.

#### **101.4 Inspections and Maintenance**

RG200.5 recorded one storm event at M-SMA-4 during the 2012 season. These rain events triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 101-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Visual	COMP-21623	03-27-2012
Annual Erosion Evaluation	COMP-23409	03-27-2012
Storm Rain Event	BMP-28720	10-18-2012

There were no maintenance activities conducted at M-SMA-4 in 2012.

### 101.5 Compliance Status

The Sites associated with M-SMA-4 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 101-3 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
AOC 48-001	Corrective Action Initiated	Corrective Action Initiated	Initiated 10-31-2011
SWMU 48-005	Corrective Action Initiated	Corrective Action Initiated	Initiated 10-31-2011
SWMU 48-007(a)	Corrective Action Initiated	Corrective Action Complete	NMED, September 2010, "Certificates of Completion, Upper Mortandad Canyon Aggregate Area"
SWMU 48-007(d)	Corrective Action Initiated	Corrective Action Complete	NMED, September 2010, "Certificates of Completion, Upper Mortandad Canyon Aggregate Area"
SWMU 48-010	Corrective Action Initiated	Corrective Action Complete	NMED, September 2010, "Certificates of Completion, Upper Mortandad Canyon Aggregate Area"



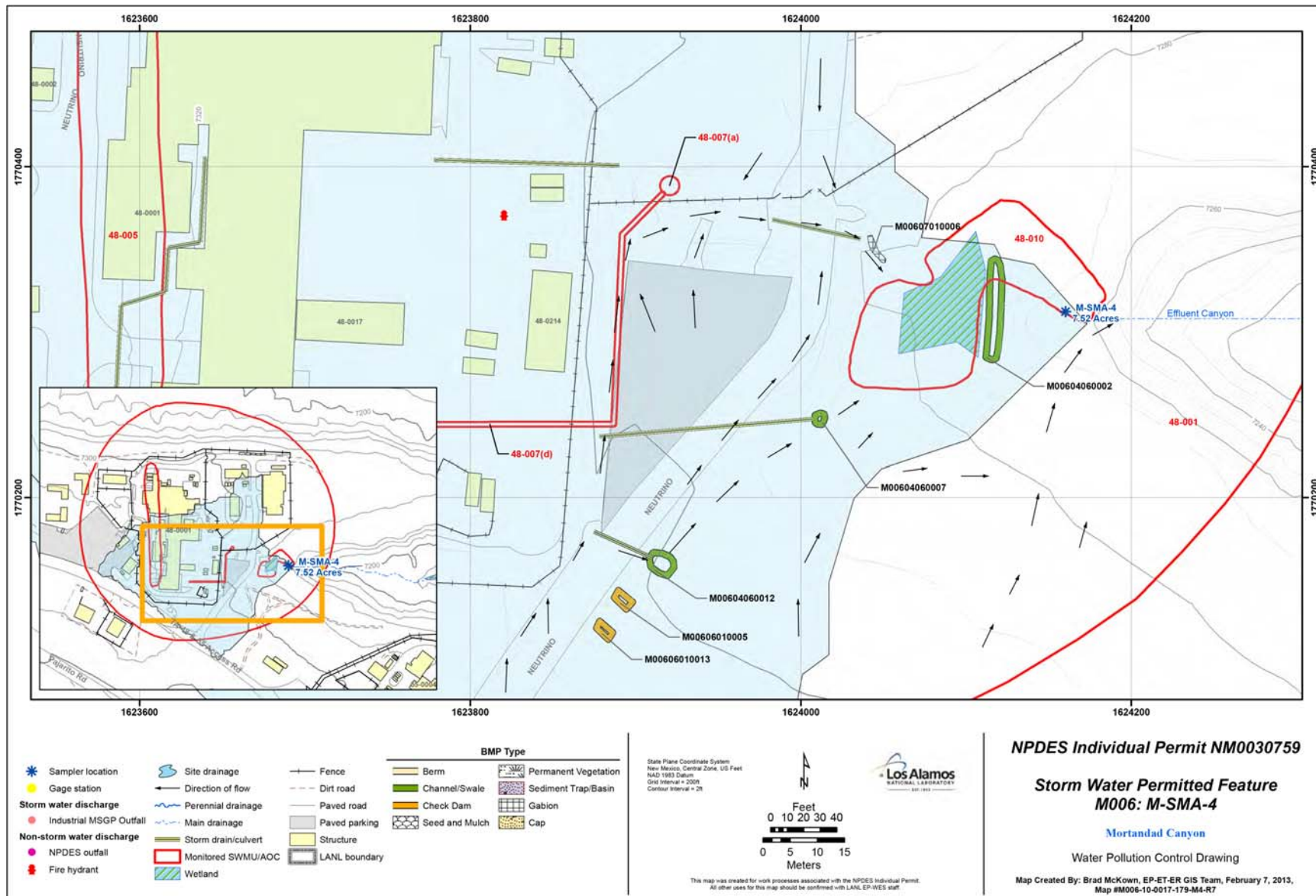
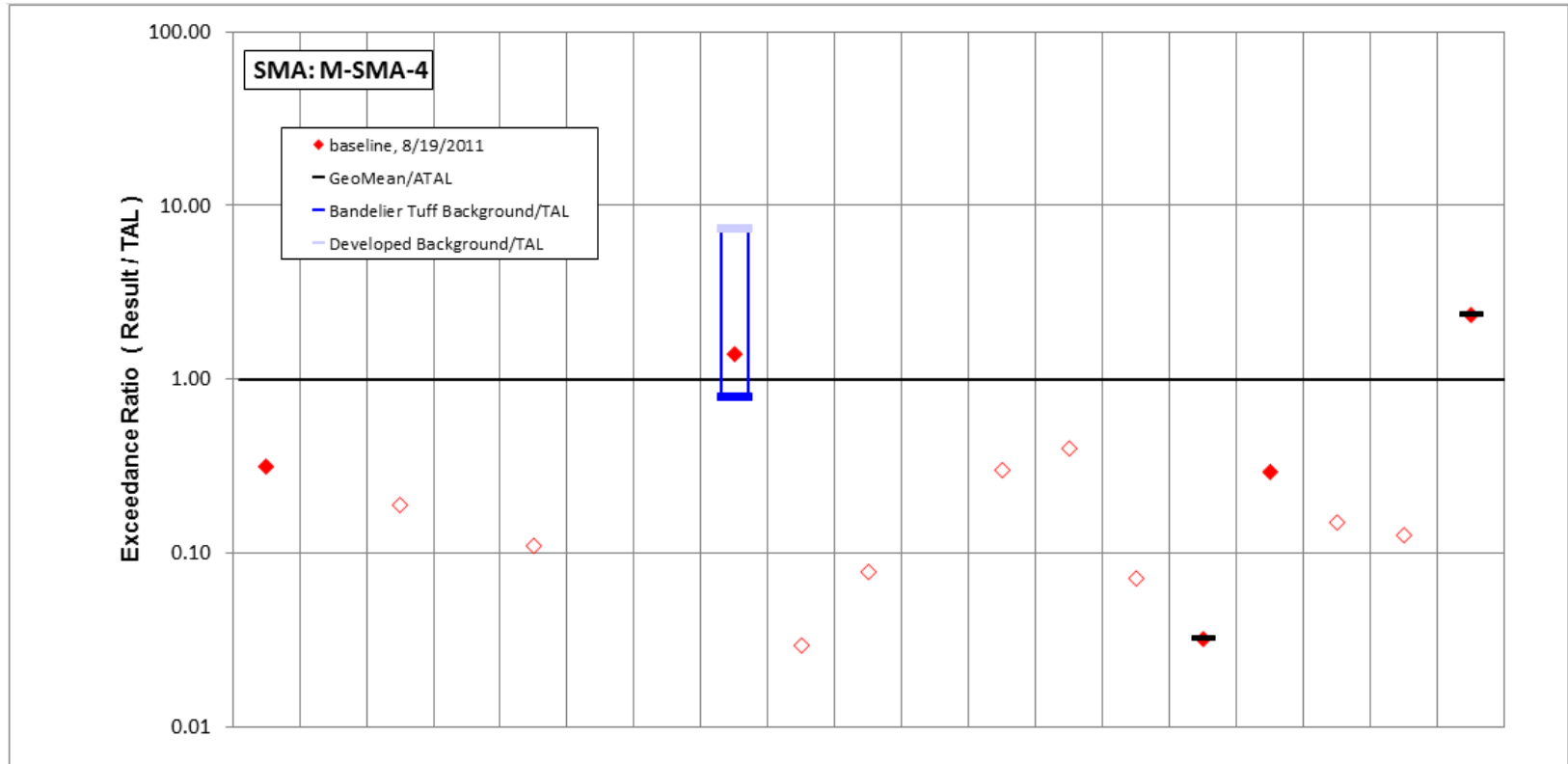


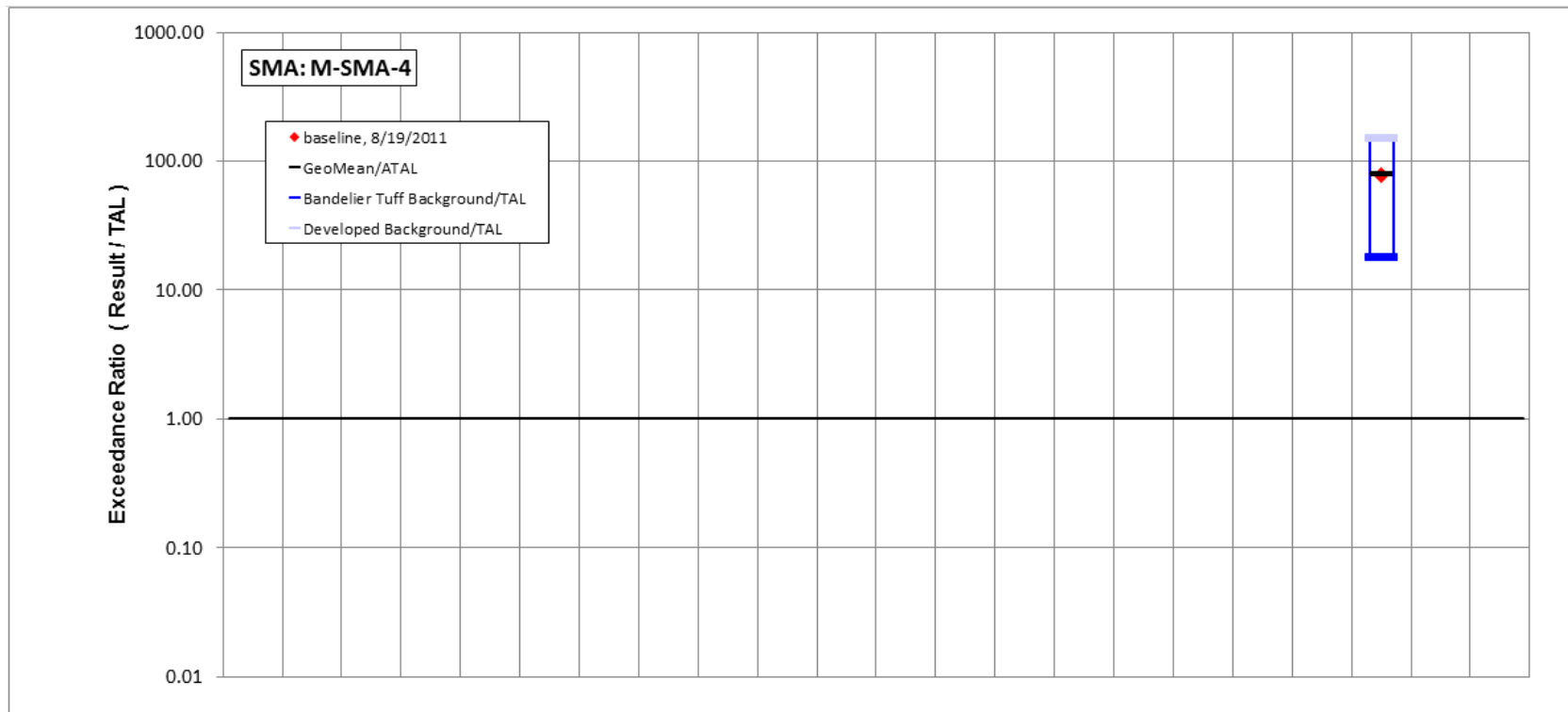
Figure 101-1 M-SMA-4 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	<b>Copper</b>	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	Gross alpha	<b>Radium-226 and Radium-228</b>
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
<b>8/19/2011 result</b>	236	1	1.7	18.5	0.11	2	2.3	<b>6</b>	0.5	0.06	0.96	1.5	0.2	0.45	3.2	12.3	0.002	1.9	<b>70.3</b>
result / TAL	0.31	0.002	0.19	0.0037	0.11	0.01	0.0023	<b>1.4</b>	0.029	0.078	0.0056	0.3	0.4	0.071	0.032	0.29	0.15	0.13	2.3

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 101-2 Inorganic analytical results summary plot for M-SMA-4



	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	<b>Total PCB</b>	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	-	-
std value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6E-04	-	-
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
<b>8/19/2011 result</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>0.05</b>	-	-
<b>result / TAL</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>78</b>	-	-

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 101-3 Organic analytical results summary plot for M-SMA-4

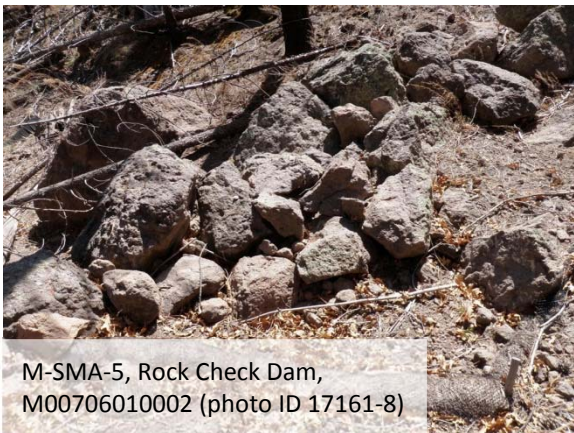
**102.0 M-SMA-5: SWMUs 42-001(a), 42-001(b), 42-001(c), and 42-002(b) and AOC 42-002(a)**

**102.1 Site Descriptions**

Five historical industrial activity areas are associated with M007, M-SMA-5: Sites 42-001(a), 42-001(b), 42-001(c), 42-002(a), and 42-002(b).

SWMU 42-001(a) along with SWMUs 42-001(b and c), 42-002(b), and 42-003 and AOC 42-002(a) comprises Consolidated Unit 42-001(a)-99. SWMU 42-001(a) is the historical location of former building 42-0001 that housed the former TA-42 radioactive waste incinerator. Former building 42-0001 was a 2000-ft<sup>2</sup> steel-frame structure covered with corrugated metal. The building contained the incinerator, a cyclone dust collector, a spray cooler, a Venturi scrubber, a filter bank, and an ash separator. Combustion products passed through an off-gas cleanup system before they were released through an exhaust stack. The off-gas system consisted of a Venturi scrubber, a filter bank, and an ash separator. Ash trapped in the off-gas system and incinerator was transported by underground drainlines to two holding tanks [SWMUs 42-001(b) and 42-001(c)] located immediately north of the incinerator. Building 42-0001 and its concrete foundation were removed in 1978.

SWMU 42-001(b) comprises Consolidated Unit 42-001(a)-99 along with SWMUs 42-001(a and c), 42-002(b), and 42-003 and AOC 42-002(a). SWMUs 42-001(b) and 42-001(c) are the historical locations of two former aboveground ash-holding tanks (former structures 42-0002 and 42-0003, respectively) associated with the incinerator complex. Each tank was 22 ft in diameter and approximately 13 ft high, with a volume of 37,000 gal. The tanks were built in 1951 and removed in 1978. When the tanks were decommissioned in 1978, the contents were assayed and measured for plutonium. Contaminated sludge was removed, mixed with cement, and taken to Area G for storage. The tanks were excavated and disposed of at Material Disposal Area (MDA) G. The tank drainlines were filled with asphalt to contain radioactive contamination. It is not known if the drainlines were removed.



M-SMA-5, Rock Check Dam, M00706010002 (photo ID 17161-8)

SWMU 42-001(c) along with SWMUs 42-001(a and b), 42-002(b), and 42-003 and AOC 42-002(a) comprises Consolidated Unit 42-001(a)-99. SWMUs 42-001(b) and 42-001(c) are the historical locations of two former aboveground ash-holding tanks (former structures 42-0002 and 42-0003, respectively) associated with the incinerator complex. Each tank was 22 ft in diameter and approximately 13 ft high, with a volume of 37,000 gal. The tanks were built in 1951 and removed in 1978. When the tanks were decommissioned in 1978, the contents were assayed and measured for plutonium. Contaminated sludge

was removed, mixed with cement, and taken to Area G for storage. The tanks were excavated and disposed of at MDA G. The tank drainlines were filled with asphalt to contain radioactive contamination. It is not known if the drainlines were removed.

SWMU 42-002(b) along with SWMUs 42-001(a, b, and c) and 42-003 and AOC 42-002(a) comprises Consolidated Unit 42-001(a)-99. SWMU 42-002(b) is the location of a historical outdoor decontamination area. Objects (such as vehicles) that were too large to decontaminate inside building 42-0001 were decontaminated at the end of the asphalt driveway located west and north of building 42-0001. Wash water from decontamination activities flowed down the embankment on the

northwest side of the parking lot. Potentially contaminated soil in that area was not addressed during the 1978 D&D activities.

AOC 42-002(a) along with SWMUs 42-001(a, b, and c), 42-002(b), and 42-003 comprises Consolidated Unit 42-001(a)-99. AOC 42-002(a) is the historical location of an indoor storage (former building 42-0001) and decontamination area. Between 1956 and 1969, the main floor of former building 42-0001 was used to store and decontaminate equipment.

The project map (Figure 102-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 102.2 Control Measures

Besides the outfall, the TA-55 facility south of the security fence does not contribute run-on to the Permitted Feature. Run-on from the NPDES outfall, the areas east of building 55-0066, and the access road that bisects the Permitted Feature is diverted to the channel just east of 42-002(b) and discharges away from the SMA boundary and sampler to the west. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 102-1).

**Table 102-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M00702010004	Established Vegetation - Grasses and Shrubs			X		CB
M00702020006	Established Vegetation - Forested/Needle Cast			X		CB
M00702030014	Established Vegetation - Vegetative Buffer Strip		X	X		CB
M00703060015	Berms - Straw Wattles	X			X	CB
M00704010013	Channel/Swale - Earthen	X		X		CB
M00704020012	Channel/Swale - Concrete/Asphalt	X		X		CB
M00704060001	Channel/Swale - Riprap	X		X		CB
M00704060008	Channel/Swale - Riprap	X		X		CB
M00706010002	Check Dam - Rock		X		X	CB
M00706010007	Check Dam - Rock	X			X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 102.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at M-SMA-5. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.



**102.4 Inspections and Maintenance**

RG200.5 recorded one storm event at M-SMA-5 during the 2012 season. These rain events triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 102-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23410	06-08-2012
Storm Rain Event	BMP-28721	10-18-2012

There were no maintenance activities conducted at M-SMA-5 in 2012.

**102.5 Compliance Status**

The Sites associated with M-SMA-5 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 102-3 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 42-001(a)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 42-001(b)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 42-001(c)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
AOC 42-002(a)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 42-002(b)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

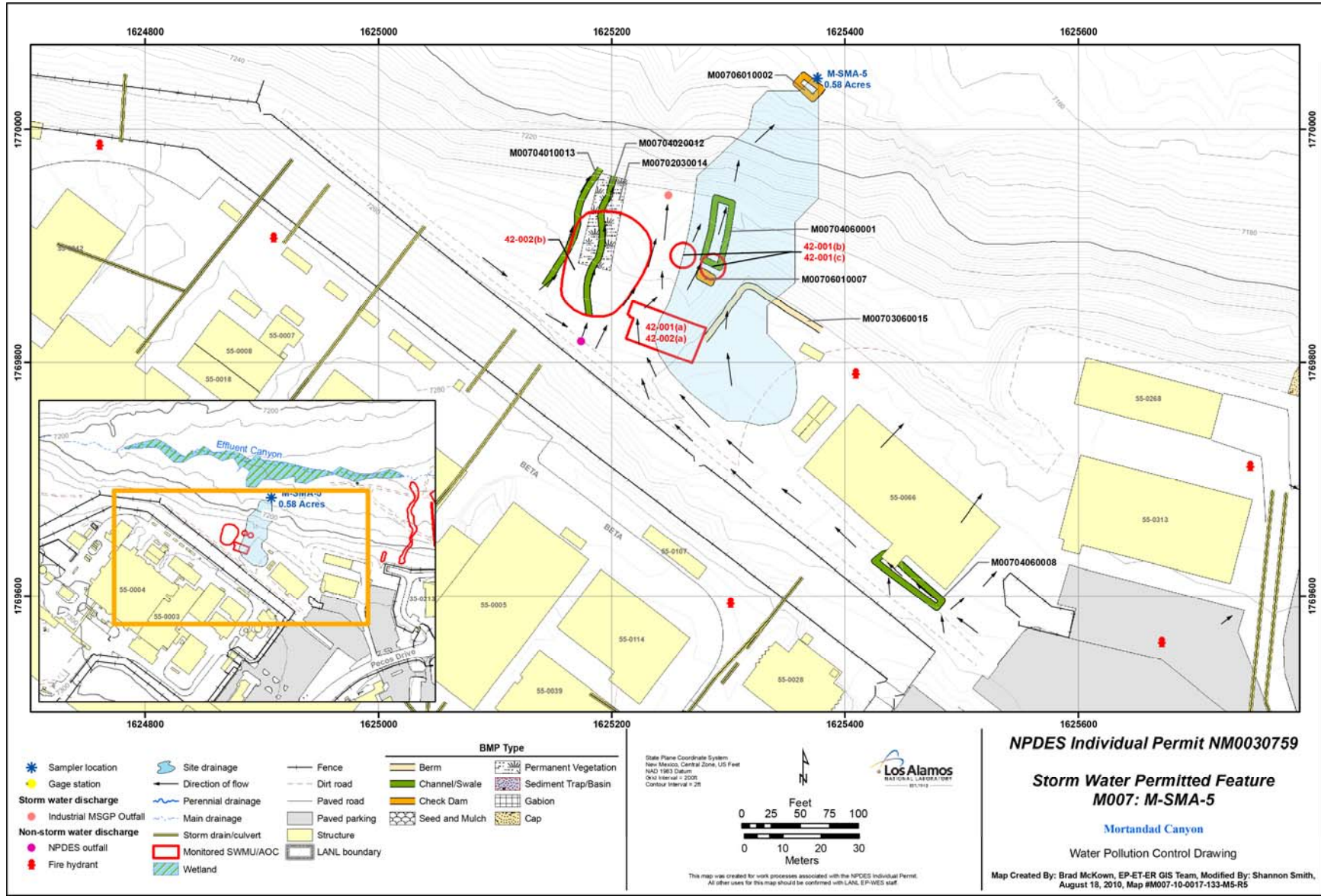


Figure 102-1 M-SMA-5 location map



### 103.0 M-SMA-6: AOC 35-016(h)

#### 103.1 Site Descriptions

One historical industrial activity area is associated with M008, M-SMA-6: Site 35-016(h).

AOC 35-016(h) consists of three storm drains located north of building 35-213. The storm drains were installed in 1979 to handle storm water runoff from roof drains of building 35-213, runoff from the nearby parking lot, and discharge from a water deionizer in building 35-213. The drain from the water deionizer was rerouted to the RLW drain system in the mid-1990s and no longer discharges to the storm water system.

The storm drain that handles the runoff from roof drains is located on the north side of building 35-213. The storm drain that used to handle discharge from the water deionizer is located on the northeast side of building 35-213. This storm drain currently handles only storm water runoff from the area around building 35-213. The third storm drain that handles storm water from the nearby parking lot is located northwest of building 35-213. All three storm drains discharge into Mortandad Canyon. Potential contaminants associated with industrial materials historically managed at this Site are naturally occurring inorganic chemicals concentrated in deionizer brine.

The project map (Figure 103-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

#### 103.2 Control Measures

This SMA is influenced by paved areas and the associated engineered controls. Also, a new sediment basin controls paved run-on before it is discharged into the channel. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 103-1).



M-SMA-6, Rip Rap, M00804060001 (photo ID 10550-6)

**Table 103-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M00802010004	Established Vegetation - Grasses and Shrubs			X		CB
M00802020005	Established Vegetation - Forested/Needle Cast			X		CB
M00804060001	Channel/Swale - Riprap	X		X		CB
M00804060014	Channel/Swale - Riprap			X		CB
M00805020016	Sediment Traps and Basins - Sediment Basin	X			X	CB
M00806010007	Check Dam - Rock	X			X	CB
M00806010010	Check Dam - Rock		X		X	CB
M00806010011	Check Dam - Rock		X		X	CB
M00806010012	Check Dam - Rock		X		X	CB
M00806010017	Check Dam - Rock		X		X	B
M00806010018	Check Dam - Rock	X			X	B
M00806010019	Check Dam - Rock	X			X	B
M00806010020	Check Dam - Rock	X			X	B
M00806010021	Check Dam - Rock		X		X	B
M00806010022	Check Dam - Rock		X		X	B
M00806010023	Check Dam - Rock		X		X	B
M00807020013	Gabions - Gabion Blanket	X		X		CB
M00808030002	Cap - Asphalt	X		X		CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

Enhanced control measures will be installed in the second quarter of 2013 as part of corrective action.

### 103.3 Storm Water Monitoring

AOC 35-016(h) is monitored within M-SMA-6. Following the installation of baseline control measures, a baseline storm water sample was collected on October 12, 2012 (Figures 103-2 and 103-3). Analytical results from this sample yielded three TAL exceedances:

- Copper concentration of 13 µg/L (MTAL is 4.3 µg/L),
- Gross-alpha activity of 168 pCi/L (ATAL is 15 pCi/L), and
- PCB concentration of 30 ng/L (ATAL is 0.6 ng/L).

These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

*AOC 35-016(h)*: Potential contaminants associated with industrial materials historically managed at this Site are naturally occurring inorganic chemicals concentrated in deionizer brine.

- Copper—Copper was detected at a maximum concentration 2.3 times BV in soil samples collected during the 2009 Consent Order investigation.
- PCBs—Consent Order samples were not analyzed for PCBs because they were not identified as potential contaminants at the Site.
- Gross alpha—Consent Order samples were not analyzed for alpha-emitting radionuclides because these constituents were not identified as potential contaminants at this Site.

In summary, copper is not known to be associated with industrial materials managed at the Site and was detected only slightly above BV. Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. Americium-241 and uranium-235, which are alpha-emitting isotopes, were detected above FV and slightly above BV, respectively, in gamma spectroscopy results. Americium and uranium isotopes, however, are excluded from the definition of adjusted gross-alpha radioactivity. No other alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Based on site history and previous sampling results, the Site is an unlikely source of copper above MTAL and adjusted gross alpha above ATAL in storm water. PCBs are not known to be associated with industrial materials historically managed at the Site. Based on site history, the Site is an unlikely source of PCBs above ATAL in storm water.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figures 103-2 and 103-3. UTLs developed for urban settings were derived from runoff from developed landscapes on the Pajarito Plateau, including buildings, parking lots, roads, and associated features, and are labeled “Developed Background” in Figures 103-2 and 103-3.

Monitoring location M-SMA-6 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as from landscape consisting of Bandelier Tuff sediment. Metals including copper are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals. PCBs are associated with building materials including paint, caulking, asphalt, solvents, transformers, and cutting oils.

- Copper—The copper UTL from developed urban landscape storm water run-on is 32.3 µg/L; the copper UTL for storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L. The copper result from 2012 is between these two values.
- Gross alpha—The gross-alpha UTL from developed urban landscape storm water run-on is 32.5 pCi/L; the gross-alpha UTL for storm water containing sediments derived from Bandelier Tuff is 1490 pCi/L. The 2012 gross-alpha result is between these two values.
- PCB—The PCB UTL from developed urban landscape storm water run-on is 98 ng/L; the PCB UTL for storm water containing sediments derived from Bandelier Tuff is 11.7 ng/L. The PCB result from 2012 is between these two values.

All the analytical results for these samples are reported in the 2012 Annual Report.



### 103.4 Inspections and Maintenance

RG200.5 recorded one storm event at M-SMA-6 during the 2012 season. These rain events triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 103-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23411	05-29-2012
Storm Rain Event	BMP-28722	10-18-2012
Maintenance	BMP-29263	10-30-2012
Visual	COMP-30330	12-06-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 103-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-23719	Extended ends, modified spillway, and built up rock check dam M00806010011.	06-06-2012	8 day(s)	Maintenance conducted in timely manner.
BMP-23720	Installed new rock check dam M00806010023 south of existing rock check dam -0009, which was retired.	06-06-2012	8 day(s)	Maintenance conducted in timely manner.
BMP-23720	Installed new rock check dams M00806010021 and -0022 south of existing rock check dam -0008, which was retired.	06-06-2012	8 day(s)	Maintenance conducted in timely manner.
BMP-29053	Added rock to build up and extend rock check dam M00806010007.	10-30-2012	12 day(s)	Maintenance conducted in timely manner.
BMP-29054	Added rock to build up and extend rock check dam M00806010010.	10-30-2012	12 day(s)	Maintenance conducted in timely manner.
BMP-29055	Added rock to build up and extend rock check dam M00806010021.	10-30-2012	12 day(s)	Maintenance conducted in timely manner.
BMP-29056	Added rock to build up and extend rock check dam M00806010022.	10-30-2012	12 day(s)	Maintenance conducted in timely manner.
BMP-29057	Added rock to build up and extend rock check dam M00806010023.	10-30-2012	12 day(s)	Maintenance conducted in timely manner.
COMP-30330	Picked up trash below storm water structure. Note, we have contacted facility to request cleanup and possible solution to bear problem.	12-06-2012	0 day(s)	Maintenance conducted upon inspection.

**103.5 Compliance Status**

The Site associated with M-SMA-6 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 103-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
AOC 35-016(h)	Baseline Monitoring	Corrective Action Initiated	Initiated 11-15-2012

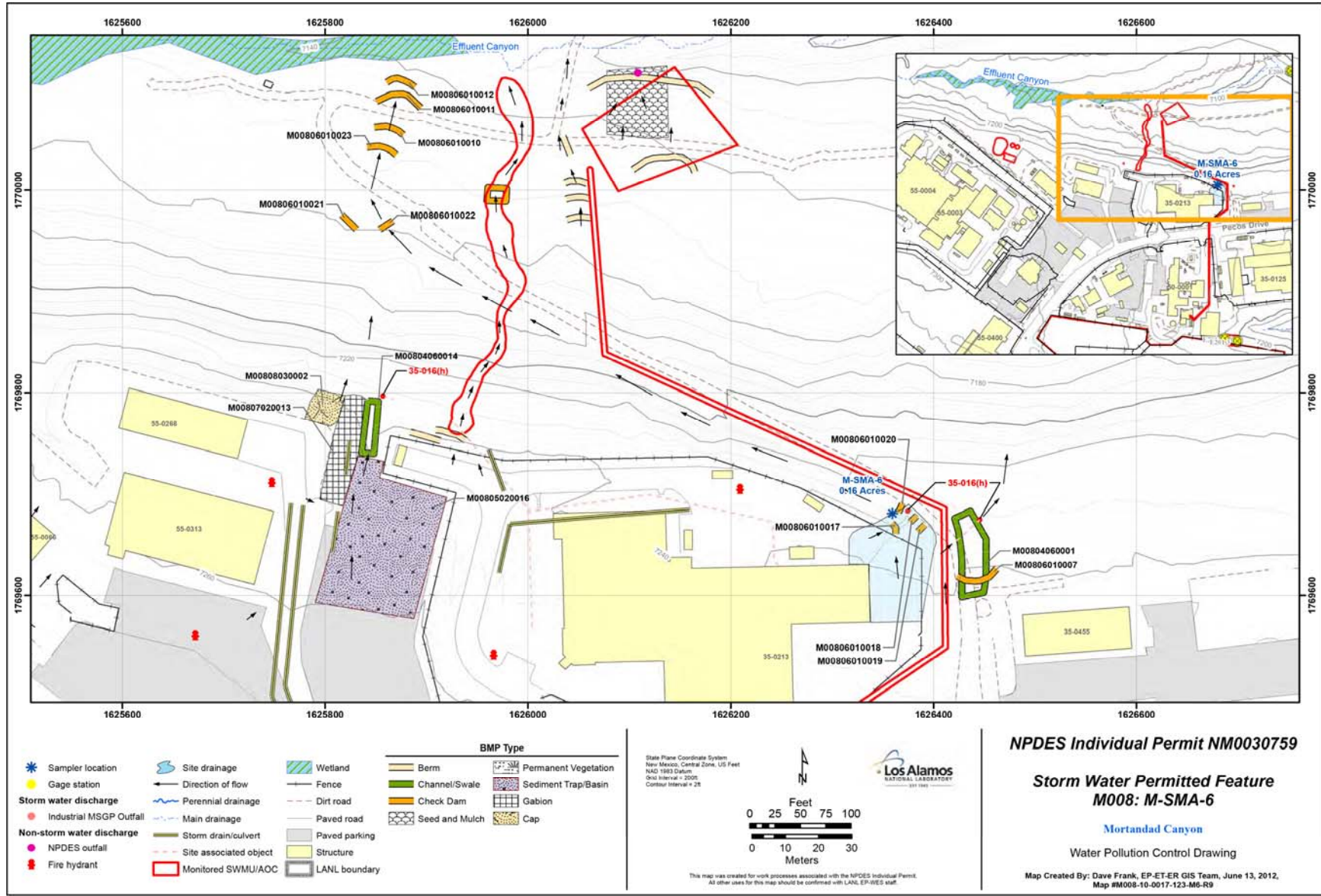
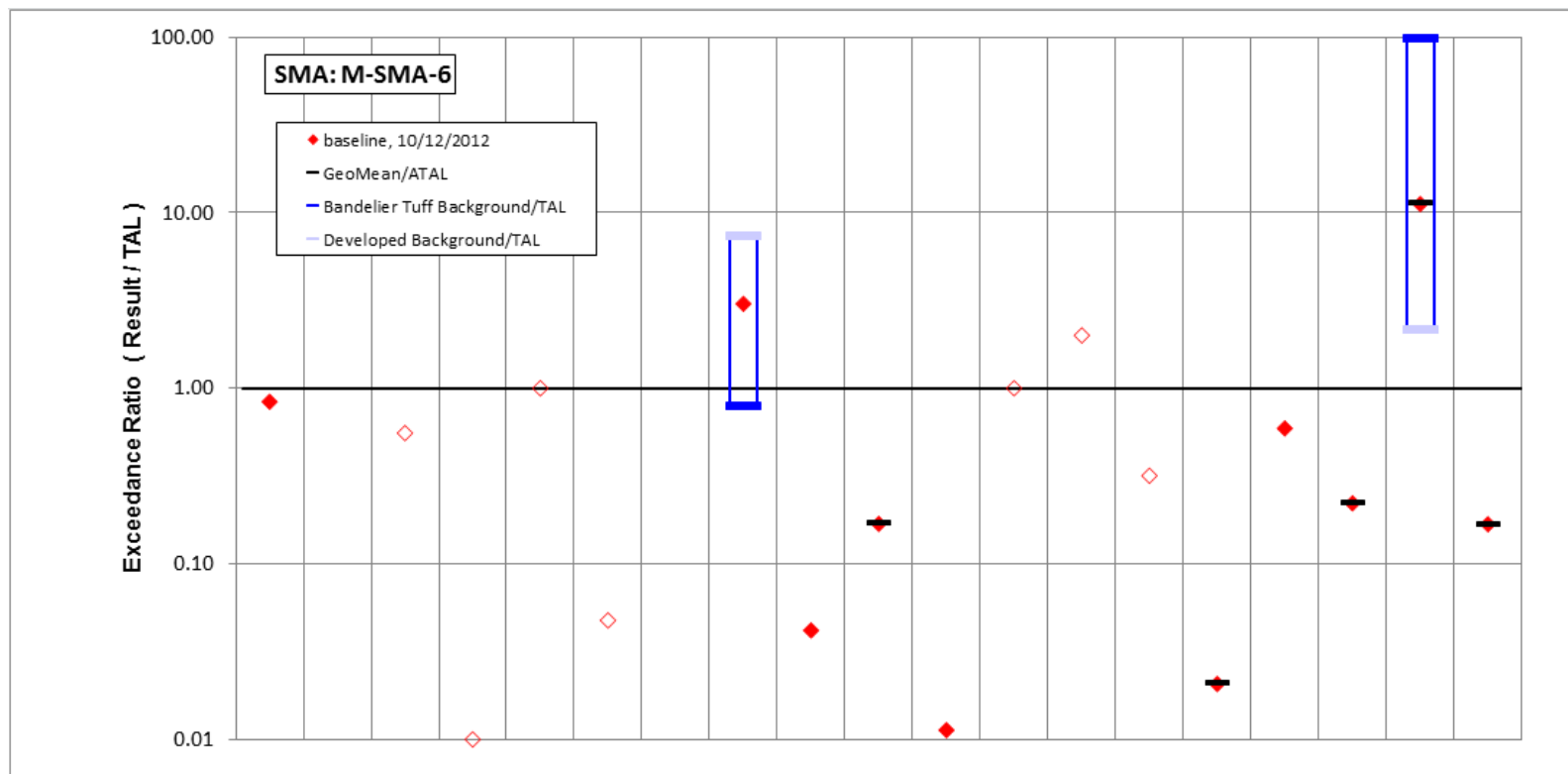


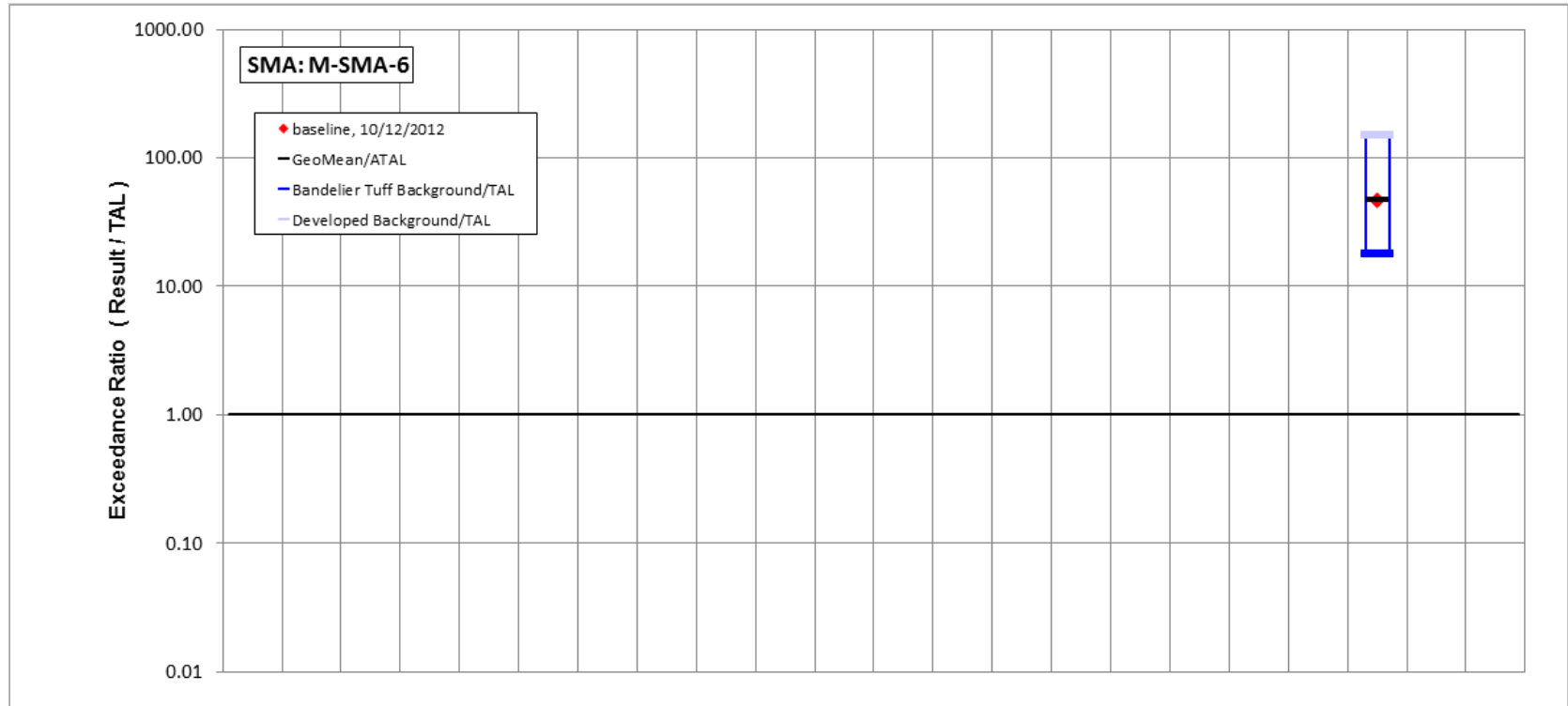
Figure 103-1 M-SMA-6 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	<b>Copper</b>	Lead	Mercury	Nickel	Selenium	<b>Silver</b>	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	<b>Gross alpha</b>	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
<b>10/12/2012 result</b>	628	3	5	50	1	10	2.91	<b>13</b>	0.71	0.13	1.92	5	<b>1</b>	2	2.07	24.8	0.0022	<b>168</b>	5.04
result / TAL	0.84	<i>0.005</i>	<i>0.56</i>	<i>0.01</i>	1	<i>0.048</i>	0.0029	<b>3</b>	0.042	0.17	0.011	1	<b>2</b>	0.32	0.021	0.59	0.22	<b>11</b>	0.17

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 103-2 Inorganic analytical results summary plot for M-SMA-6



	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	<b>Total PCB</b>	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	-	-
std value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6E-04	-	-
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
<b>10/12/2012 result</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>0.03</b>	-	-
<b>result / TAL</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>47</b>	-	-

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 103-3 Organic analytical results summary plot for M-SMA-6



## 104.0 M-SMA-7: AOC 35-016(g)

### 104.1 Site Descriptions

One historical industrial activity area is associated with M009, M-SMA-7: Site 35-016(g).

AOC 35-016(g) is a former NPDES outfall (EPA 04A127) established in 1979 to handle reverse-osmosis discharge and cooling tower blowdown from room 29 in building 35-213, the Target Fabrication Facility. The outfall was removed from the NPDES permit in September 1997. The former NPDES outfall now handles only cooling tower blowdown from the same room. The drainage runs approximately 100 ft north to its point of discharge on the south rim of Mortandad Canyon. The potential contaminants associated with industrial materials historically managed at this Site are naturally occurring inorganic chemicals concentrated in reverse-osmosis brine and cooling-tower blowdown and conditioning chemicals added to cooling water.

The project map (Figure 104-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

The Site boundary for AOC 35-016(g) has been modified to match the boundary depicted in the administrative record for the Consent Order, which is the controlling authority for SWMU and AOC boundary definitions used in the IP. The Site boundary change was minor and did not affect the SMA boundary or sampler location. The updated boundary is shown on the project map (Figure 104-1) and the Site physical characteristic information listed in Attachment 4 has been updated.

### 104.2 Control Measures

There is minimal run-on from the paved areas above this Permitted Feature. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 104-1).

**Table 104-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M00902020002	Established Vegetation - Forested/Needle Cast			X		CB
M00903060007	Berms - Straw Wattles	X			X	B
M00903060008	Berms - Straw Wattles	X			X	B
M00906010003	Check Dam - Rock		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

Enhanced control measures will be installed in the second quarter of 2013 as part of corrective action.

### 104.3 Storm Water Monitoring

AOC 35-016(g) is monitored within M-SMA-7. Following the installation of baseline control measures, a baseline storm water sample was collected on July 7, 2012 (Figure 104-2). Analytical results from this sample yielded two TAL exceedances:

- Zinc concentration of 60.6 µg/L (MTAL is 42 µg/L), and
- Gross-alpha activity of 46.3 pCi/L (ATAL is 15 pCi/L).

These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

*AOC 35-016(g):* The potential contaminants associated with industrial materials historically managed at this Site are naturally occurring inorganic chemicals concentrated in reverse-osmosis brine and cooling-tower blowdown and conditioning chemicals added to cooling water.

- Zinc—Zinc was detected at a maximum concentration 2.9 times BV in soil samples collected during the 2009 Consent Order investigation.
- Gross alpha—Consent Order samples were not analyzed for alpha-emitting radionuclides because these constituents were not identified as potential contaminants at this Site.

In summary, zinc is not known to be associated with industrial materials managed at the Site and was only detected slightly above BV. Based on site history and previous sampling results, the Site is an unlikely source of zinc above MTAL in storm water. Alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. Based on site history, the Site is an unlikely source of adjusted gross alpha above ATAL.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figure 104-2. UTLs developed for urban settings were derived from runoff from developed landscapes on the Pajarito Plateau, including buildings, parking lots, roads, and associated features, and are labeled “Developed Background” in Figure 104-2.

Monitoring location M-SMA-7 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as from landscape consisting of Bandelier Tuff sediment. Metals including copper and aluminum are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Zinc—The zinc UTL from developed urban landscape storm water run-on is 1120 µg/L; the zinc UTL for storm water containing sediments derived from Bandelier Tuff is 109 µg/L. The zinc result from the 2012 sample is less than both of these values.
- Gross alpha—The gross-alpha UTL from developed urban landscape storm water run-on is 32.5 pCi/L; the gross-alpha UTL for storm water containing sediments derived from Bandelier Tuff is 1490 pCi/L. The 2012 gross-alpha result is between these two values.

All the analytical results for these samples are reported in the 2012 Annual Report.

#### 104.4 Inspections and Maintenance

RG200.5 recorded one storm event at M-SMA-7 during the 2012 season. These rain events triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 104-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23412	06-04-2012
Visual	COMP-27871	10-01-2012
Storm Rain Event	BMP-28723	10-24-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 104-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-23983	Retired straw wattles M00903060005, replaced with new straw wattles M00903060006.	06-13-2012	9 day(s)	Maintenance conducted in timely manner.
BMP-28723	Replaced wattle M00903060006 with new wattle -0007.	10-24-2012	0 day(s)	Maintenance conducted upon inspection.
BMP-29286	Installed new straw wattle M00903060008 in same location as wattle -0004, which was retired.	11-02-2012	9 day(s)	Maintenance conducted in timely manner.

#### 104.5 Compliance Status

The Site associated with M-SMA-7 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 104-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
AOC 35-016(g)	Baseline Monitoring	Corrective Action Initiated	Initiated 08-22-2012

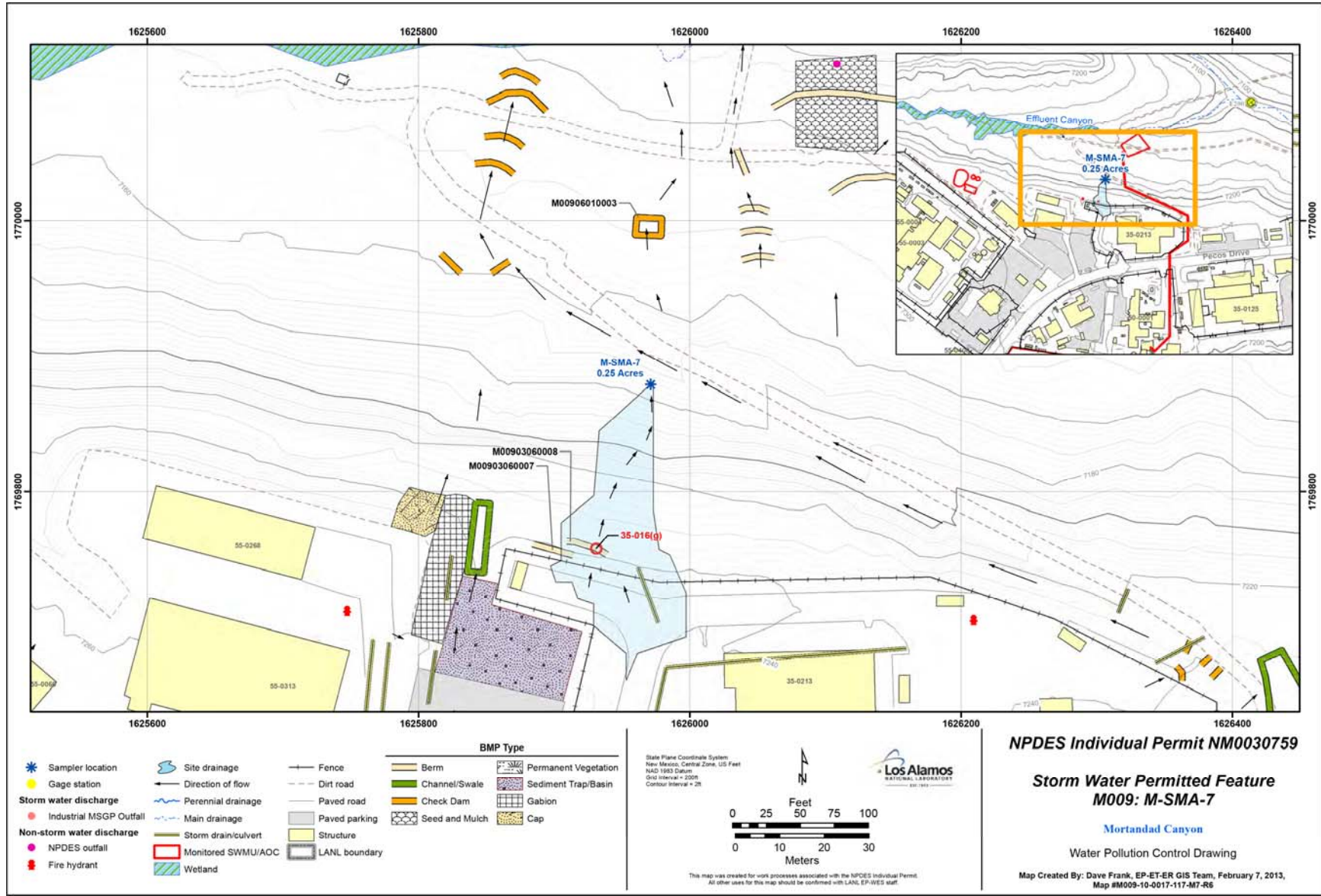
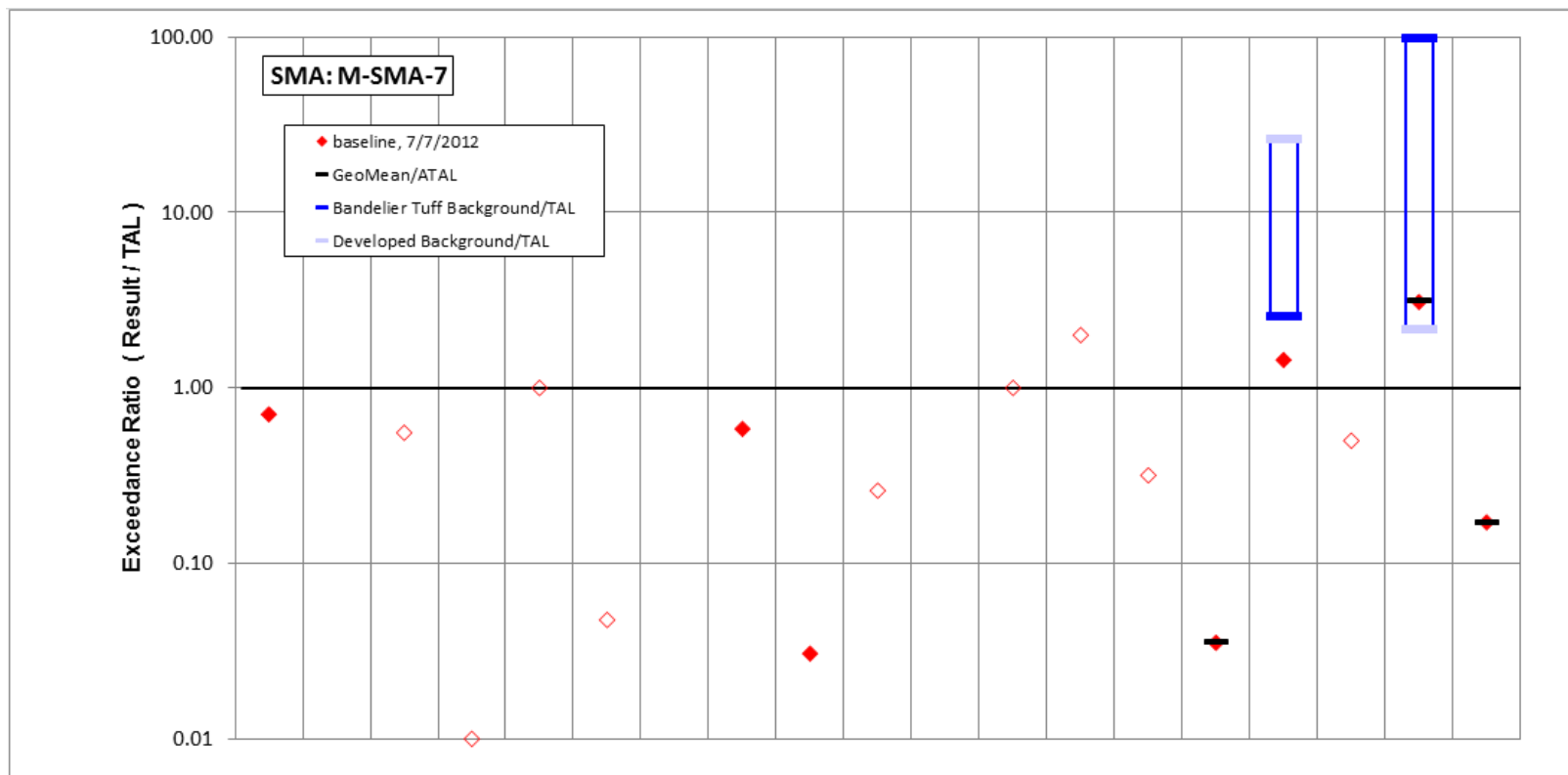


Figure 104-1 M-SMA-7 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	Gross alpha	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
7/7/2012 result	530	4.84	5	50	1	10	2.15	2.51	0.52	0.2	1.07	5	1	2	3.53	60.6	0.005	46.3	5.14
result / TAL	0.71	0.0076	0.56	0.01	1	0.048	0.0022	0.58	0.031	0.26	0.0063	1	2	0.32	0.035	1.4	0.5	3.1	0.17

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 104-2 Inorganic analytical results summary plot for M-SMA-7



**105.0 M-SMA-7.9: SWMU 50-006(d)**

**105.1 Site Descriptions**

One historical industrial activity area is associated with M010, M-SMA-7.9: Site 50-006(d).

SWMU 50-006(d) consists of a drainline (structure 50-0064) and associated NPDES-permitted Outfall 051 in Mortandad Canyon for treated wastewater from the radioactive liquid waste treatment facility ([RLWTF] building 50-0001). Structure 50-0064 is a 6-in.-diameter iron discharge pipe that was rerouted in 1983 to accommodate construction of the TA-35 Target Fabrication Facility (building 35-0213). In 1985, EPA Region 6 issued an administrative order to the U.S. Department of Energy (DOE) requiring modification of the outfall to mitigate ongoing stream-bank erosion caused by the discharge pipe ending 25 ft short of the stream channel. DOE extended the pipe into the stream channel, and subsequently EPA Region 6 closed the order in 1986.

The project map (Figure 105-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

**105.2 Control Measures**

The unpaved road running north to south, east of the SMA, diverts run-on to the west of the SWMU. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 105-1).

**Table 105-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M01001010001	Seed and Mulch - Seed and Wood Mulch			X		CB
M01002010002	Established Vegetation - Grasses and Shrubs			X		CB
M01002020003	Established Vegetation - Forested/Needle Cast			X		CB
M01003010004	Berms - Earthen	X			X	CB
M01003010010	Berms - Earthen	X			X	CB
M01003010011	Berms - Earthen	X			X	CB
M01003010012	Berms - Earthen		X		X	B
M01003120005	Berms - Rock	X			X	CB
M01003120006	Berms - Rock	X			X	CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

### 105.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at M-SMA-7.9. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

The monitoring station was relocated on October 24, 2012, and is situated approximately 75–80 ft to the east of the original sampler location and downstream of the newly installed controls. The new location of the sampler will provide a more representative sample of storm water discharge from SWMU 50-006(d). Sampler coordinates and SMA drainage area are updated in Attachment 4.

### 105.4 Inspections and Maintenance

RG200.5 recorded one storm event at M-SMA-7.9 during the 2012 season. These rain events triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 105-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23413	05-29-2012
Storm Rain Event	BMP-28724	10-18-2012

There were no maintenance activities conducted at M-SMA-7.9 in 2012.

### 105.5 Compliance Status

The Site associated with M-SMA-7.9 is a high priority Site. Corrective action is to be certified complete within 3 yr of the effective date of the IP (i.e., November 2015).

**Table 105-3 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 50-006(d)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

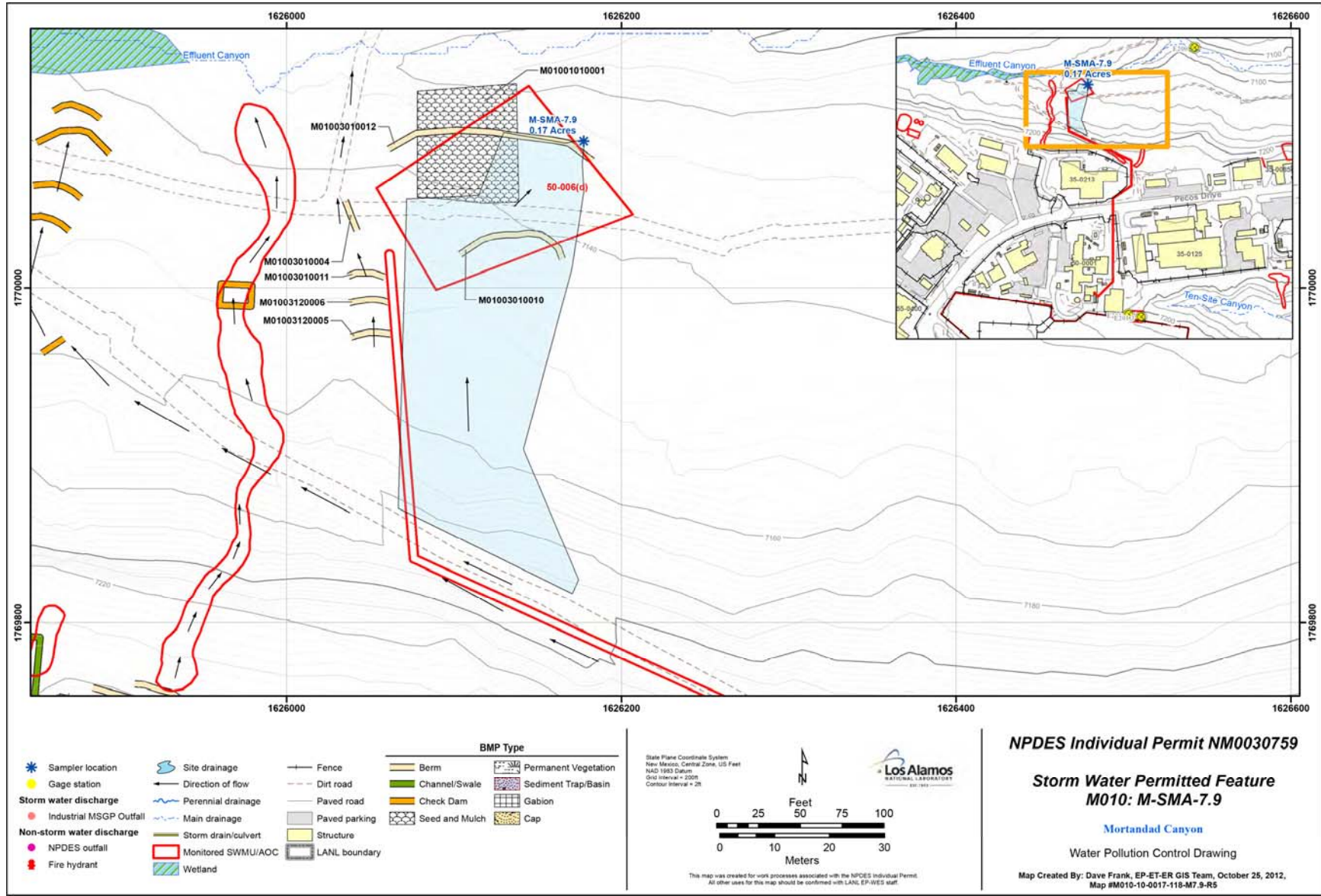


Figure 105-1 M-SMA-7.9 location map

## 106.0 M-SMA-9.1: AOC 35-016(f)

### 106.1 Site Descriptions

One historical industrial activity area is associated with M011, M-SMA-9.1: Site 35-016(f).

AOC 35-016(f) is an active storm drain located north of the chemical-laser facility (building 35-85) on the west half of the TA-35 mesa. The outfall consists of an 18-in.-diameter CMP that discharges into a small channel cut into backfill material on the south slope of Mortandad Canyon. Documented releases consisting of oil spills reportedly occurred near the source areas for the storm drain. The volume of the spills is not documented.

The project map (Figure 106-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 106.2 Control Measures

The culvert/drop inlet and roof drain divert run-on from the buildings and paved areas above away from the Permitted Feature. The storm drain fed by the drop inlet west of building 36-0085 discharges outside the SMA boundary above and to the east of the outfall for 35-016(f). The roof drain from building 35-0189 discharges outside or to the west of the SMA and does not impact the sampler. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 106-1).

**Table 106-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M01101020001	Seed and Mulch - Seed and Gravel	X		X		CB
M01102020006	Established Vegetation - Forested/Needle Cast			X		CB
M01104040004	Channel/Swale - Culvert	X		X		CB
M01106010005	Check Dam - Rock		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 106.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at M-SMA-9.1. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 106.4 Inspections and Maintenance

RG200.5 recorded one storm event at M-SMA-9.1 during the 2012 season. These rain events triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.



**Table 106-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23414	06-04-2012
Storm Rain Event	BMP-28725	10-18-2012

There were no maintenance activities conducted at M-SMA-9.1 in 2012.

**106.5 Compliance Status**

The Site associated with M-SMA-9.1 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 106-3 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
AOC 35-016(f)	Baseline Monitoring	Baseline Monitoring Extended	No Comment



M-SMA-9.1, Rock Check Dam, M01106010005 (photo ID 7467-4)



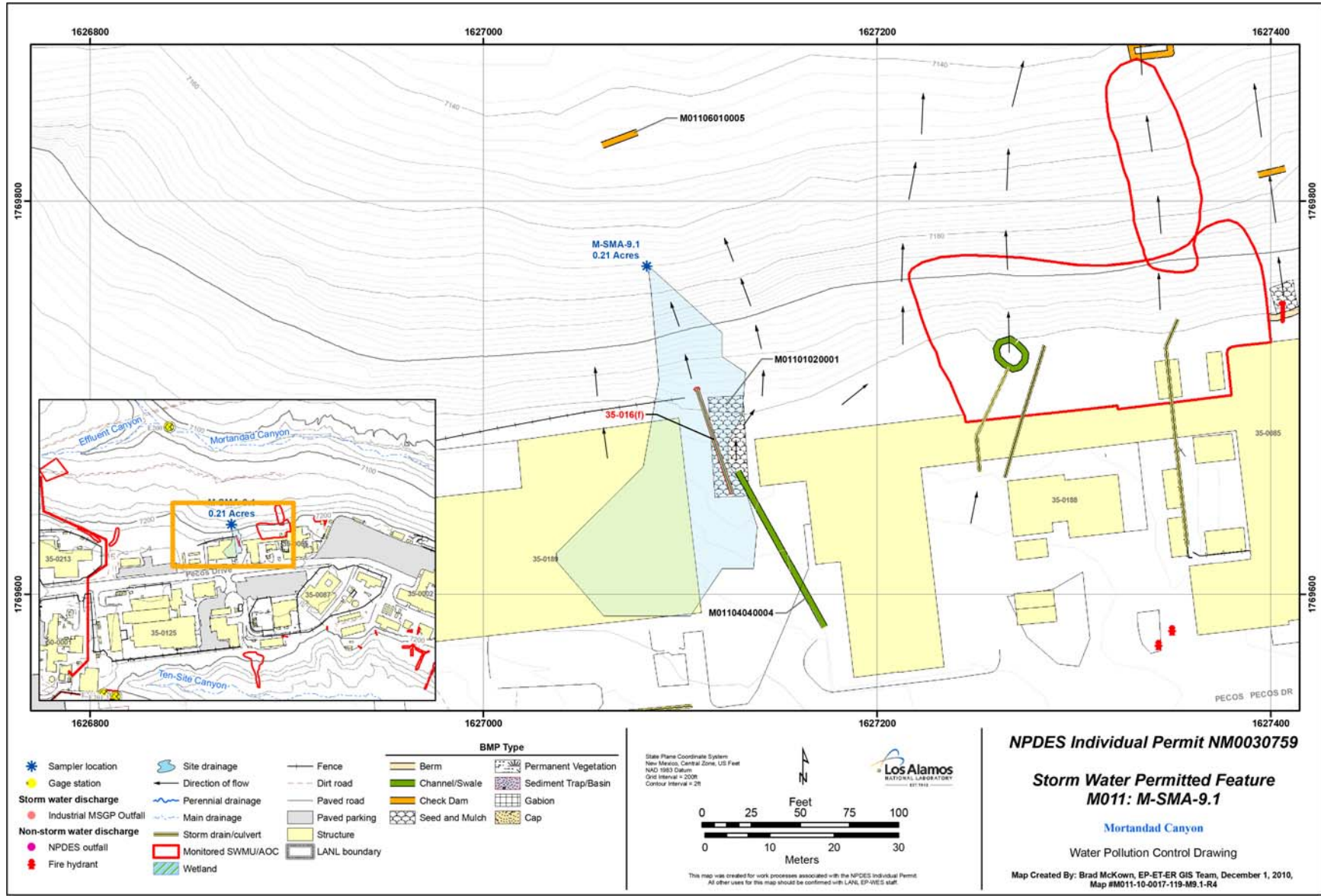
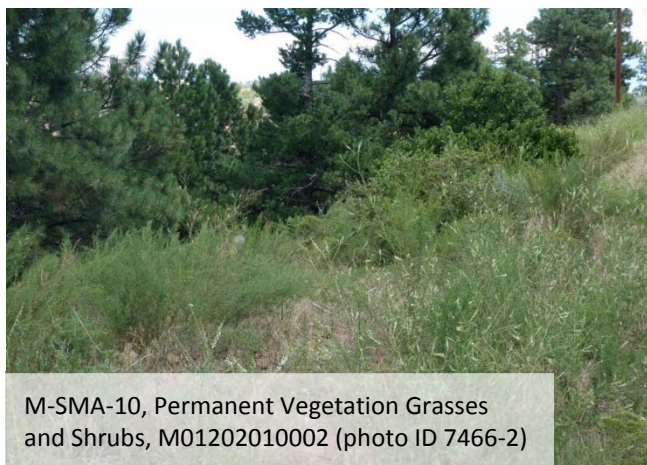


Figure 106-1 M-SMA-9.1 location map

## 107.0 M-SMA-10: SWMUs 35-008 and 35-014(e)

### 107.1 Site Descriptions

Two historical industrial activity areas are associated with M012, M-SMA-10: Sites 35-008 and 35-014(e). SWMU 35-008 is the location of an inactive surface disposal area located north of building 35-85 on the edge of Mortandad Canyon. Debris at the site consists of construction debris, including scrap metal and pipe, paint cans, a 55-gal. drum, and miscellaneous building materials refuse such as a large concrete slab, conduits, asphalt, pipe, and reinforcing rods. During a site inspection in 1991, only a small amount of debris, including tubing, scrap metal, and soda cans was observed at the site. The surface disposal area has likely been in existence since 1977 when the nearby Chemical Laser Facility (building 35-85) was constructed. Debris associated with SWMU 35-008 extends from the canyon rim to the canyon floor. Some of the dielectric oil associated with SWMU 35-014(e) flowed northward to the mesa edge and partially down the mesa slope over portions of the SWMU 35-008 disposal area. SWMU 35-008 along with SWMU 35-014(e) is a component of a consolidated unit.



M-SMA-10, Permanent Vegetation Grasses and Shrubs, M01202010002 (photo ID 7466-2)

SWMU 35-014(e) is an area of oil-stained soil on the northern edge of Ten Site Mesa directly north of building 35-85. The 1990 SWMU Report described SWMU 35-014(e) as three dielectric oil spill areas associated with building 35-85; however, the 1992 RFI work plan described each spill area as a separate SWMU. The stained soil associated with SWMU 35-014(e) may have been a result of a non-PCB dielectric oil spill that occurred east of building 35-188 when a forklift punctured an aboveground oil storage tank. The oil tank was removed before 1992. The non-PCB dielectric oil was used in laser experiment

conducted in building 35-85. The volume of oil released is not known. However, it was reported that oil from the release flowed northward to the mesa edge and partially down the mesa slope over portions of the SWMU 35-008 disposal area. A 1984 photograph shows that the spill did flow down the side of the mesa. Reports also suggest that oil-stained soil may have been pushed over the mesa during the cleanup of the spill (the spill cleanup is not documented). After the oil spill, an extension to building 35-85 was construction between building 35-188 and the edge of the mesa to house laser experiments. The building extension covers a portion of the area of the reported oil spill. The construction of this extension may have included site leveling, soil stabilization, and extension and stabilization of the mesa edge by backfilling with soil and riprap materials. During a site visit in 1997, stained soil was visible on the slope near the edge of the mesa as dark stained that covered an area measuring approximately 15 ft × 10 ft. No stained soils or odors were apparent on the mesa top north of building 35-85. No remediation activities are documented for SWMU 35-014(e). SWMU 35-014(e) along with SWMU 35-008 is a component of a consolidated unit.

The project map (Figure 107-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 107.2 Control Measures

The primary source of run-on to the Permitted Feature comes from two culverts that drain from the paved areas and the roof of building 35-0085. Check dams and riprap in two drainage channels manage the associated discharge. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 107-1).

**Table 107-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M01202010002	Established Vegetation - Grasses and Shrubs			X		CB
M01202020011	Established Vegetation - Forested/Needle Cast			X		CB
M01204060004	Channel/Swale - Riprap	X		X		CB
M01204060007	Channel/Swale - Riprap		X	X		CB
M01204060008	Channel/Swale - Riprap		X	X		CB
M01206010001	Check Dam - Rock		X		X	CB
M01206010005	Check Dam - Rock		X		X	CB
M01206010006	Check Dam - Rock		X		X	CB
M01206010009	Check Dam - Rock		X		X	CB
M01206010010	Check Dam - Rock		X		X	CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

### 107.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at M-SMA-10. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 107.4 Inspections and Maintenance

RG200.5 recorded one storm event at M-SMA-10 during the 2012 season. These rain events triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 107-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23401	06-04-2012
Storm Rain Event	BMP-28714	10-18-2012

There were no maintenance activities conducted at M-SMA-10 in 2012.

**107.5 Compliance Status**

The Sites associated with M-SMA-10 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 107-3 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 35-008	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 35-014(e)	Baseline Monitoring	Baseline Monitoring Extended	No Comment



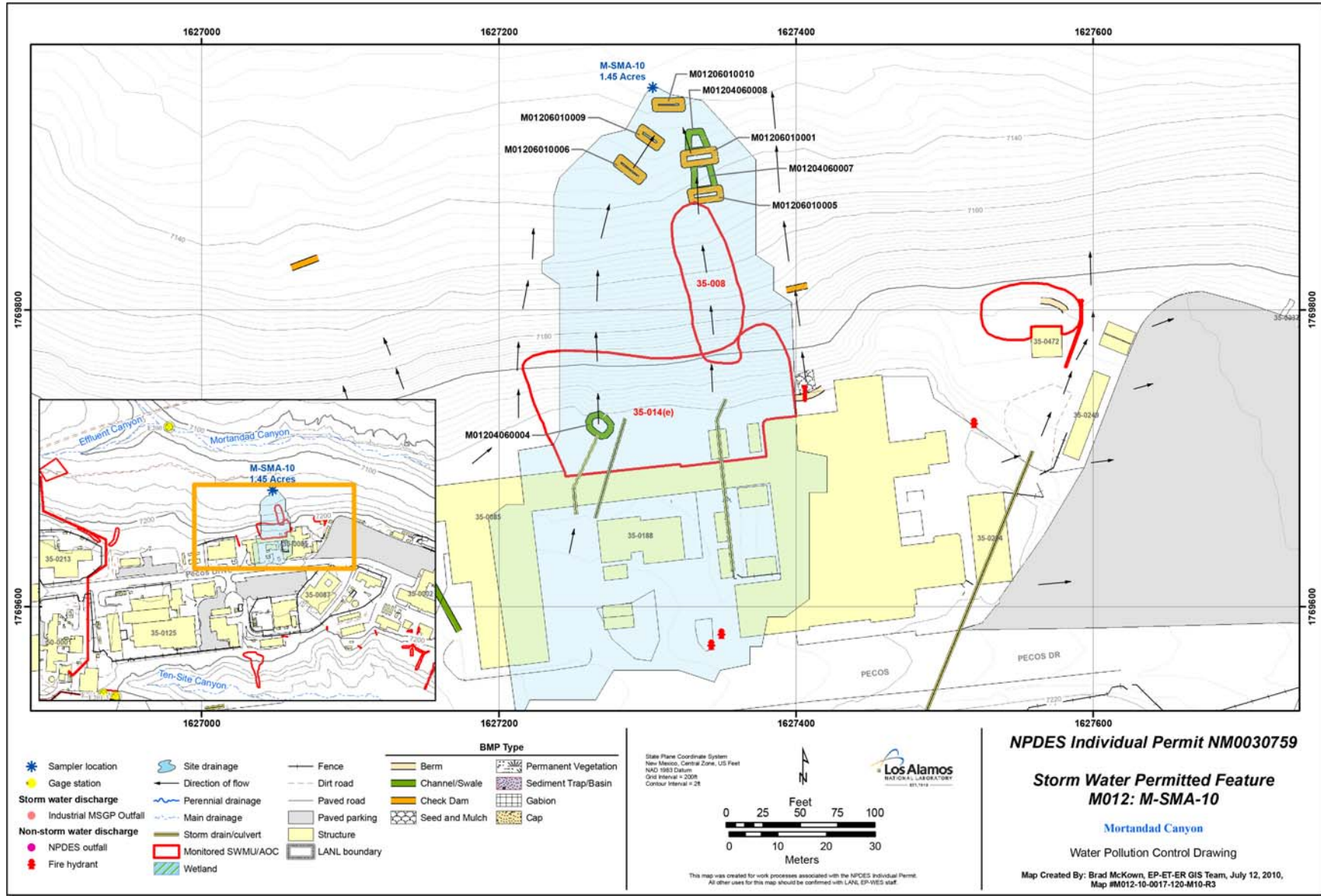


Figure 107-1 M-SMA-10 location map



## 108.0 M-SMA-10.01: AOC 35-016(e)

### 108.1 Site Descriptions

One historical industrial activity area is associated with M012A, M-SMA-10.01: Site 35-016(e).

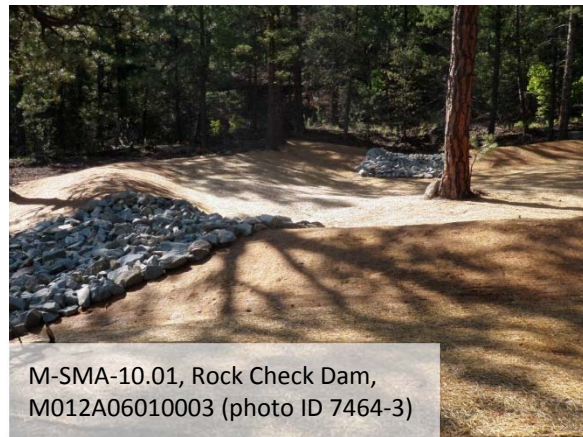
AOC 35-016(e) is a former NPDES-permitted outfall established in 1977 to discharge noncontact cooling water from the chemical laser facility (building 35-85). The outfall consists of two adjacent 2-in.-diameter steel pipes, insulated with fiberglass and wrapped with protective aluminum coating, that originate from cooling towers on the roof of building 35-85. The outfall is located north of building 35-85 on the rim of Mortandad Canyon. The volume of water released is not documented, but significant erosion was evident below the outfall. The outfall was deleted from the NPDES permit in April 1987. Based on human health and ecological risk screening assessments, no additional investigation or remediation activities are required at AOC 35-016(e); a COC without controls was requested from NMED in February 2011. Industrial materials were not historically managed at this Site, which received only discharges of noncontact cooling water.

The project map (Figure 108-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 108.2 Control Measures

The primary source of run-on to the Permitted Feature comes from sheet flow that drains from the paved areas and the roof of building 35-0085. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 108-1).

Enhanced controls were installed and certified on October 25, 2012, as part of corrective action. Photographs of the enhanced controls are available at <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/construction-certifications.php>.



M-SMA-10.01, Rock Check Dam, M012A06010003 (photo ID 7464-3)

**Table 108-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M012A02010005	Established Vegetation - Grasses and Shrubs			X		B
M012A03010006	Berms - Earthen		X		X	EC
M012A03010007	Berms - Earthen		X		X	EC
M012A06010003	Check Dam - Rock		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 108.3 Storm Water Monitoring

SWMU 35-016(e) is monitored within M-SMA-10.01. Following the installation of baseline control measures, a baseline storm water sample was collected on August 27, 2011, and September 15, 2011 (Figures 108-2 and 108-3). Analytical results from this sample yielded one TAL exceedances:

- Copper concentration of 6.5 and 16 µg/L (MTAL is 4.3 µg/L).

Following the installation of enhanced control measures at M-SMA-10.01, a corrective action storm water sample was collected on October 12, 2012 (Figure 108.3). Analytical results from this corrective action monitoring sample yielded one TAL exceedances:

- Gross-alpha activity of 19.6 pCi/L (ATAL is 15 pCi/L).

Corrective action has resulted in a decrease in copper detected in storm water samples collected at M-SMA-10.01 to levels below TAL and a slight increase in the gross-alpha activity.

These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

*AOC 35-016(e)*: Industrial materials were not historically managed at this Site, which received only discharges of noncontact cooling water.

- Copper—Copper was detected at a maximum concentration 1.2 times BV in soil samples collected during the 2004 investigation under the draft Consent Order.
- Gross alpha—Alpha-emitting radionuclides americium-241, plutonium-238, plutonium-239; uranium-234, uranium-235, and uranium-238 were detected with maximum activities of 3.8 times, 8.9 times, 8.7 times, 2.8 times, 2.3 times, and 4 times FVs/BVs, respectively, in samples collected during the 2004 investigation under the draft Consent Order.

In summary, copper is not known to be associated with industrial materials historically managed at the Site and was detected only slightly above BV. Based on site history and previous sampling results, the Site is an unlikely source of copper above MTAL in storm water. Americium, uranium, and plutonium, which have alpha-emitting isotopes, are not known to be associated with industrial materials historically managed at this Site; however, several isotopes were detected above BVs/FVs. Americium, uranium, and plutonium isotopes, however, are excluded from the definition of adjusted gross-alpha radioactivity. No other alpha-emitting radionuclides are known to be associated with industrial materials historically managed at the Site. Based on site history, the Site is an unlikely source of adjusted gross alpha above ATAL in storm water.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figures 108-2 and 108-3. UTLs developed for urban settings were derived from runoff from developed landscapes on the Pajarito Plateau, including buildings, parking lots, roads, and associated features, and are labeled “Developed Background” in Figures 108-2 and 108-3.

Monitoring location M-SMA-10.01 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as from landscape consisting of Bandelier Tuff sediment.

Metals including copper are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Gross alpha—The gross-alpha UTL from developed urban landscape storm water run-on is 32.5 pCi/L; the gross-alpha UTL for storm water containing sediments derived from Bandelier Tuff is 1490 pCi/L. The gross-alpha result from the 2012 corrective action sample is less than both of these values, and is only slightly above the TAL level.

All the analytical results for these samples are reported in the 2012 Annual Report.

The monitoring station was relocated on August 23, 2012, and is situated approximately 200 ft north of the original sampler location and downstream of the newly installed controls. The new location of the sampler is positioned below all enhanced controls and will provide a more representative sample of storm water discharge from SWMU 35-016(e) and the newly installed enhanced controls. Sampler coordinates and SMA drainage area are updated in Attachment 4.

#### 108.4 Inspections and Maintenance

RG200.5 recorded one storm event at M-SMA-10.01 during the 2012 season. These rain events triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 108-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Visual	COMP-21622	03-27-2012
Annual Erosion Evaluation	COMP-23402	03-27-2012
Construction	COMP-26534	08-14-2012
Construction	COMP-25492	08-14-2012
Enhanced Control Measure Verification	BMP-26656	08-21-2012
Storm Rain Event	BMP-28718	10-18-2012

There were no maintenance activities conducted at M-SMA-10.01 in 2012.

#### 108.5 Compliance Status

The Site associated with M-SMA-10.01 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 108-3 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
AOC 35-016(e)	Corrective Action Initiated	Enhanced Control Corrective Action Monitoring	Initiated 09-25-2012

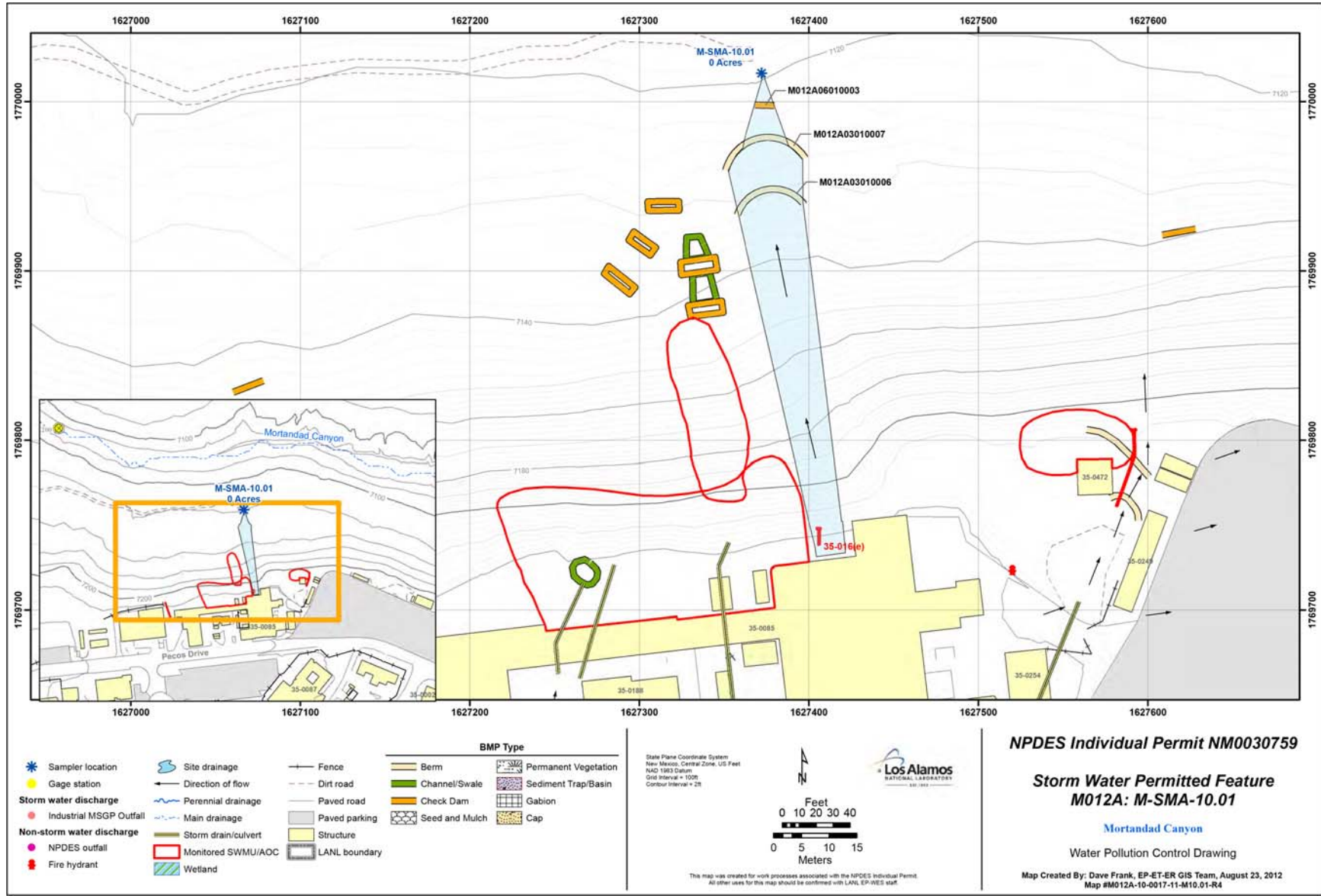
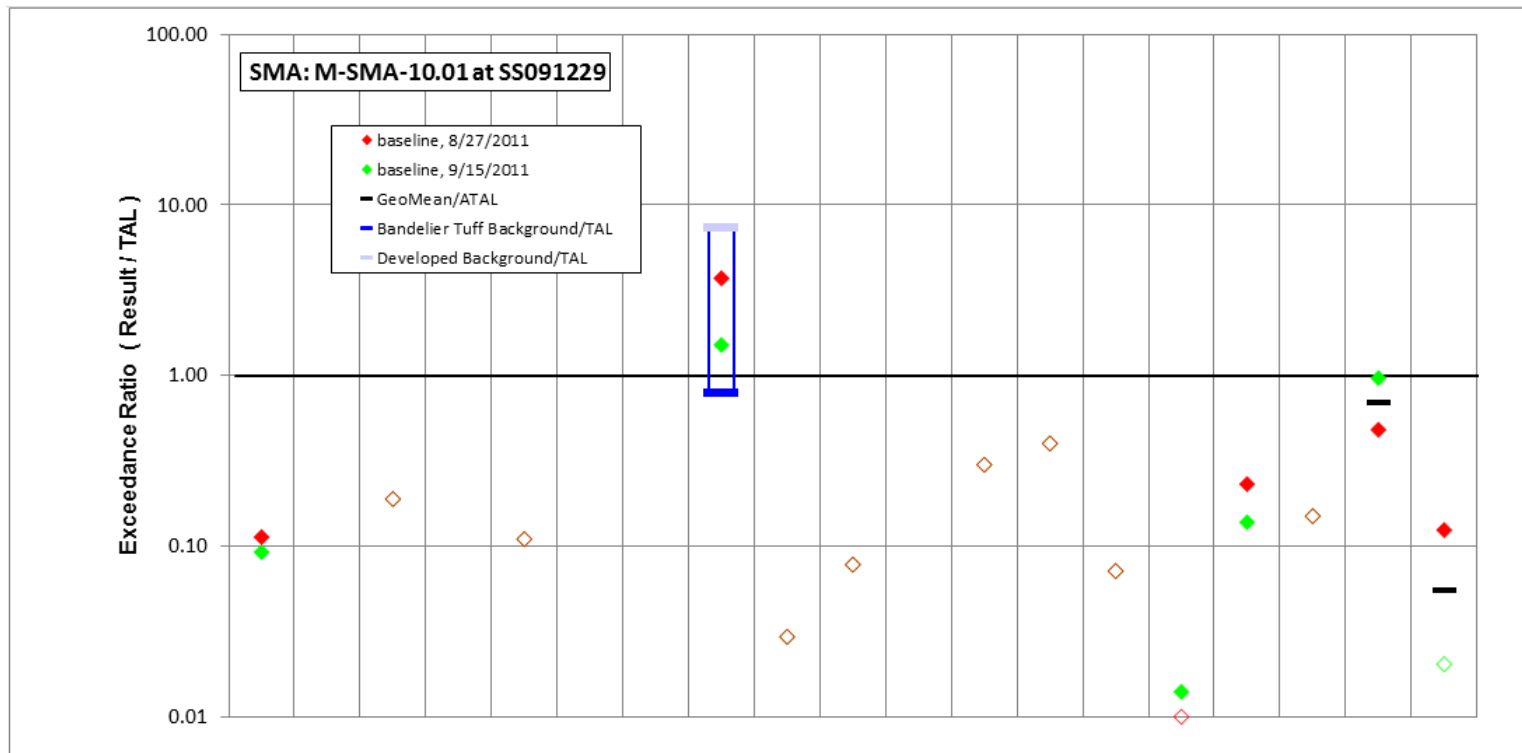


Figure 108-1 M-SMA-10.01 location map

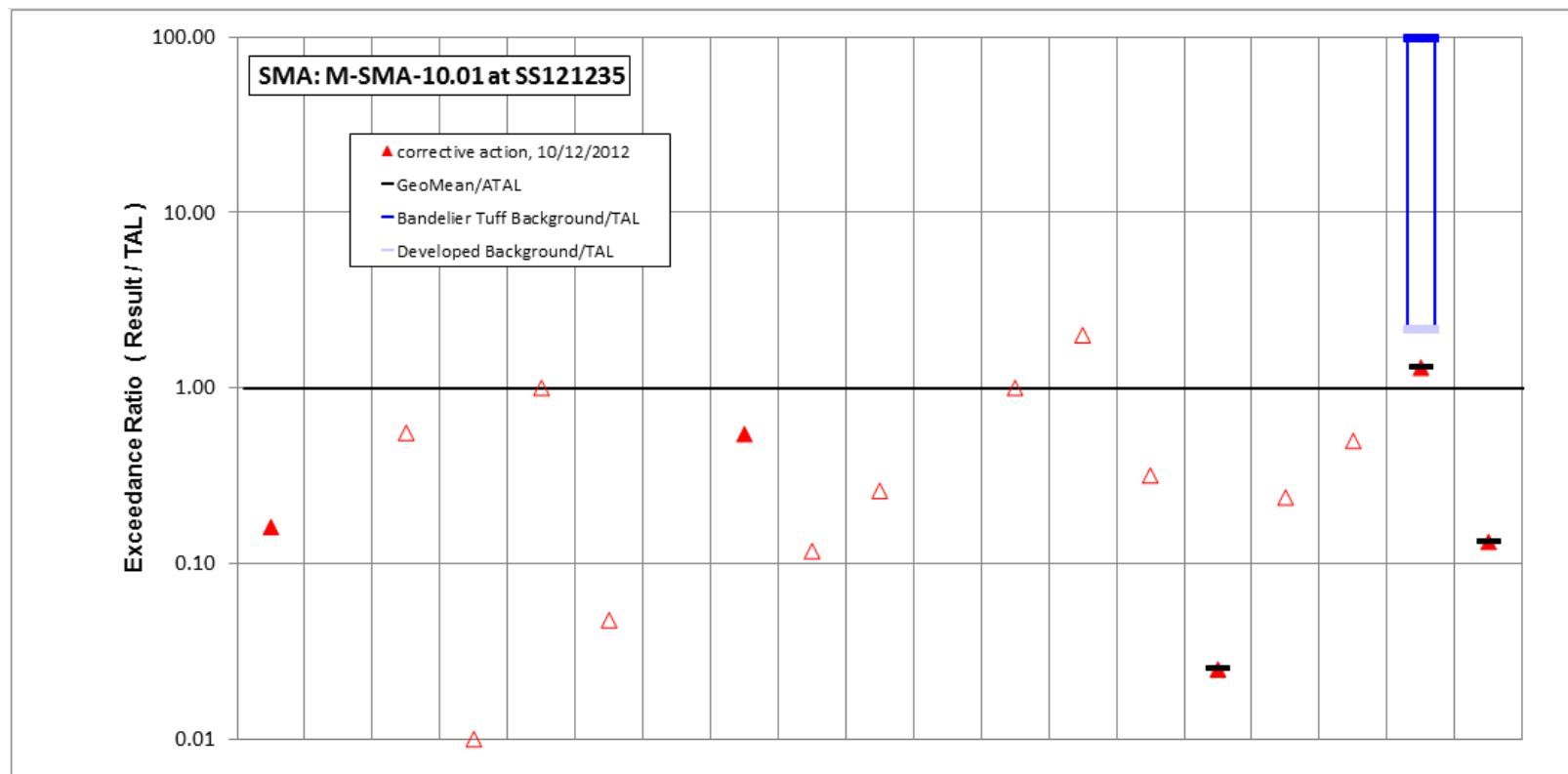


	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	<b>Copper</b>	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	Gross alpha	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
<b>9/15/2011 result</b>	69.2	1	1.7	15	0.11	2	1.9	<b>6.5</b>	0.5	0.06	0.73	1.5	0.2	0.45	1.4	5.8	0.002	14.5	0.61
result / TAL	0.092	0.002	0.19	0.003	0.11	0.01	0.0019	<b>1.5</b>	0.029	0.078	0.004	0.3	0.4	0.071	0.014	0.14	0.15	0.97	0.02
<b>8/27/2011 result</b>	84.8	1	1.7	15	0.11	2	1.4	<b>16</b>	0.5	0.06	0.73	1.5	0.2	0.45	1	9.7	0.002	7.22	3.73
result / TAL	0.11	0.002	0.19	0.003	0.11	0.01	0.0014	<b>3.7</b>	0.029	0.078	0.0043	0.3	0.4	0.071	0.01	0.23	0.15	0.48	0.12

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 108-2 Inorganic analytical results summary plot for M-SMA-10.01 at SS091229





	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	Gross alpha	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
10/12/2012 result	121	3	5	50	1	10	2.48	2.35	2	0.2	1.69	5	1	2	2.49	10	0.005	19.6	3.99
result / TAL	0.16	0.005	0.56	0.01	1	0.048	0.0025	0.55	0.12	0.26	0.0099	1	2	0.32	0.025	0.24	0.5	1.3	0.13

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 108-3 Inorganic analytical results summary plot for M-SMA-10.01 at SS121235

**109.0 M-SMA-10.3: SWMU 35-016(i) and AOC 35-014(e2)**

**109.1 Site Descriptions**

Two historical industrial activity areas are associated with M013, M-SMA-10.3: Sites 35-014(e2) and 35-016(i).

SWMU 35-016(i) is an outfall that receives storm water from storm drains south of building 35-85 along Pecos Drive. This outfall consists of an 18-in.-diameter CMP that discharges to Mortandad Canyon and was installed around 1977 when building 35-85 was constructed. The area below the outfall also receives surface water runoff from the eastern portion of AOC 35-014(e2). Based on human health and ecological risk-screening assessments, no additional investigation or remediation activities are required at SWMU 35-016(i); a COC without controls was requested from NMED in February 2011. Potential contaminants associated with industrial materials historically managed at this Site are PCBs and petroleum products from AOC 35-014(e2).

AOC 35-014(e2) is the site a former oil spill that originated from overflows of a former gunite-lined, surface waste-oil impoundment used to store waste non-PCB dielectric oil [AOC 35-005(a)]. SWMU 35-014(e2) is located approximately 150 ft northeast of building 35-85. When the AOC 35-005(a) impoundment was in operation, waste oil was periodically pumped out of the impoundment and recycled. The impoundment was drained in 1988 and decommissioned in 1989. No remediation activities are documented for AOC 35-014(e2). The 1990 SWMU Report described SWMU 35-014(e) as three dielectric oil spill areas associated with building 35-85; however, the 1992 RFI assigned separate AOC identifiers [AOCs 35-014(e2) and 35-014(e3)] to the second and third spill areas. Based on human health and ecological risk-screening assessments, no additional investigation or remediation activities are required at AOC 35-014(e2); a COC without controls was requested from NMED in February 2011. Potential contaminants associated with industrial materials historically managed at this Site are PCBs and petroleum products.

The project map (Figure 109-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

**109.2 Control Measures**

Most of the potential run-on to this Permitted Feature is from a culvert outlet discharging run-on from the parking lot drainage for the impervious area surrounding building 35-0127. Additional run-on originates from the parking lot just east of the SMA. Significant erosion and hillside instability from culvert discharge was observed during the site visit. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 109-1).

**Table 109-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M01302010004	Established Vegetation - Grasses and Shrubs			X		CB
M01302020005	Established Vegetation - Forested/Needle Cast			X		CB
M01303010011	Berms - Earthen	X			X	CB
M01303010012	Berms - Earthen		X		X	CB
M01303100013	Berms - Gravel Bags	X			X	CB
M01306010010	Check Dam - Rock		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

Enhanced control measures will be installed in the second quarter of 2013 as part of corrective action.

### 109.3 Storm Water Monitoring

SWMU 35-016(i) and AOC 35-014(e2) are monitored within M-SMA-10.3. Following the installation of baseline control measures, a baseline storm water sample was collected on July 30, 2011, and August 19, 2011 (Figures 109-2 and 109-3). Analytical results from this sample yielded five TAL exceedances:

- Aluminum concentrations of 873 and 2500 µg/L (MTAL is 750 µg/L),
- Copper concentration of 4.7 µg/L (MTAL is 4.3 µg/L),
- Zinc concentration of 55 µg/L (MTAL is 42 µg/L),
- Gross-alpha activity of 27.4 pCi/L (ATAL is 15 pCi/L), and
- PCB concentrations of 2 and 10 ng/L (ATAL is 0.6 ng/L).

These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

**AOC 35-014(e2):** Potential contaminants associated with industrial materials historically managed at this Site are PCBs and petroleum products.

- Aluminum—Aluminum was not detected above BV in soil samples collected during the 2004 investigation under the draft Consent Order.
- Copper—Copper was not detected above BV in soil samples collected during the 2004 investigation under the draft Consent Order.
- Zinc—Zinc was not detected above BV in soil samples collected during the 2004 investigation under the draft Consent Order.
- PCBs—PCBs were detected at a maximum concentration 20% of residential SSL in samples collected during the 2004 investigation under the draft Consent Order.

In summary, aluminum, copper, and zinc are not known to be associated with industrial materials historically managed at the Site and were not detected above BVs. Based on site history and previous sampling results, the Site is an unlikely source of aluminum, copper, and zinc above MTALs in storm water. PCBs are known to be associated with industrial materials historically managed at the Site but were detected at low concentrations below residential SSLs. Based on site history and previous sampling results, the Site may be a source of PCBs above ATAL in storm water.

*SWMU 35-016(i)*: Potential contaminants associated with industrial materials historically managed at this Site are PCBs and petroleum products from AOC 35-014(e2).

- Aluminum—Aluminum was not detected above BV in soil samples collected during the 2004 investigation under the draft Consent Order.
- Copper—Copper was not detected above BV in soil samples collected during the 2004 investigation under the draft Consent Order.
- Zinc—Zinc was not detected above BV in soil samples collected during the 2004 investigation under the draft Consent Order.
- PCBs—PCBs were detected at a maximum concentration 20% of residential SSL in samples collected during the 2004 investigation under the draft Consent Order.

In summary, aluminum, copper, and zinc are not known to be associated with industrial materials historically managed at the Site and were not detected above BVs. Based on site history and previous sampling results, the Site is an unlikely source of aluminum, copper, and zinc above MTALs in storm water. PCBs are known to be associated with industrial materials historically managed at the Site but were detected at low concentrations below residential SSLs. Based on site history and previous sampling results, the Site may be a source of PCBs above ATAL in storm water.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figures 109-2 and 109-3. UTLs developed for urban settings were derived from runoff from developed landscapes on the Pajarito Plateau, including buildings, parking lots, roads, and associated features, and are labeled “Developed Background” in Figures 109-2 and 109-3.

Monitoring location M-SMA-10.3 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as from landscape consisting of Bandelier Tuff sediment. Metals including zinc, copper, and aluminum are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals. PCBs are associated with building materials including paint, caulking, asphalt, solvents, transformers, and cutting oils.

- Aluminum—The aluminum UTL from developed urban landscape storm water run-on is 245 µg/L; the aluminum UTL for storm water containing sediments derived from Bandelier Tuff is 2210 µg/L. One of the aluminum results from 2011 is above both of these values, and the other is between them.
- Copper—The copper UTL from developed urban landscape storm water run-on is 32.3 µg/L; the copper UTL for storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L. The copper result from 2011 is between these two values.

- Zinc—The zinc UTL from developed urban landscape storm water run-on is 1120 µg/L; the zinc UTL for storm water containing sediments derived from Bandelier Tuff is 109 µg/L. The zinc result from the 2011 sample is less than both of these values.
- Gross alpha—The gross-alpha UTL from developed urban landscape storm water run-on is 32.5 pCi/L; gross-alpha UTL for storm water containing sediments derived from Bandelier Tuff is 1490 pCi/L. The 2011 gross-alpha result is less than both of these values.
- PCB—The PCB UTL from developed urban landscape storm water run-on is 98 ng/L; PCB UTL for storm water containing sediments derived from Bandelier Tuff is 11.7 ng/L. The PCB results from 2011 are both less than these two values.

All the analytical results for these samples are reported in the 2011 Annual Report.

#### 109.4 Inspections and Maintenance

RG200.5 recorded one storm event at M-SMA-10.3 during the 2012 season. These rain events triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 109-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Visual	COMP-20993	03-27-2012
Annual Erosion Evaluation	COMP-23403	03-27-2012
Storm Rain Event	BMP-28715	10-18-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 109-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-29052	Added rock to build up and extend rock check dam M01306010010.	10-25-2012	7 day(s)	Maintenance conducted in timely manner.

#### 109.5 Compliance Status

The Sites associated with M-SMA-10.3 are high priority Sites. Corrective action is to be certified complete within 3 yr of the effective date of the IP (i.e., November 2015).

**Table 109-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
AOC 35-014(e2)	Corrective Action Initiated	Corrective Action Initiated	Initiated 10-24-2011
SWMU 35-016(i)	Corrective Action Initiated	Corrective Action Initiated	Initiated 10-24-2011



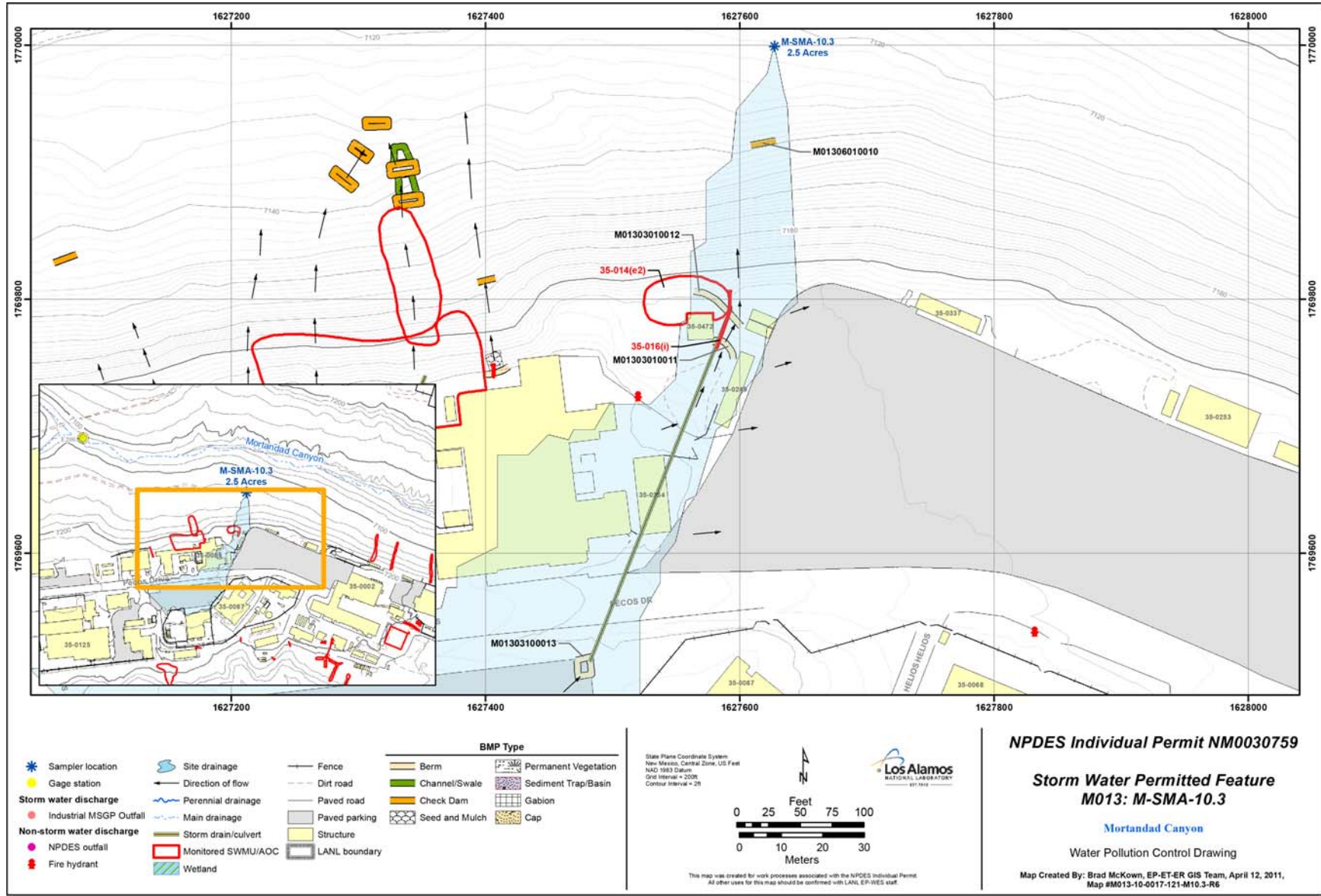
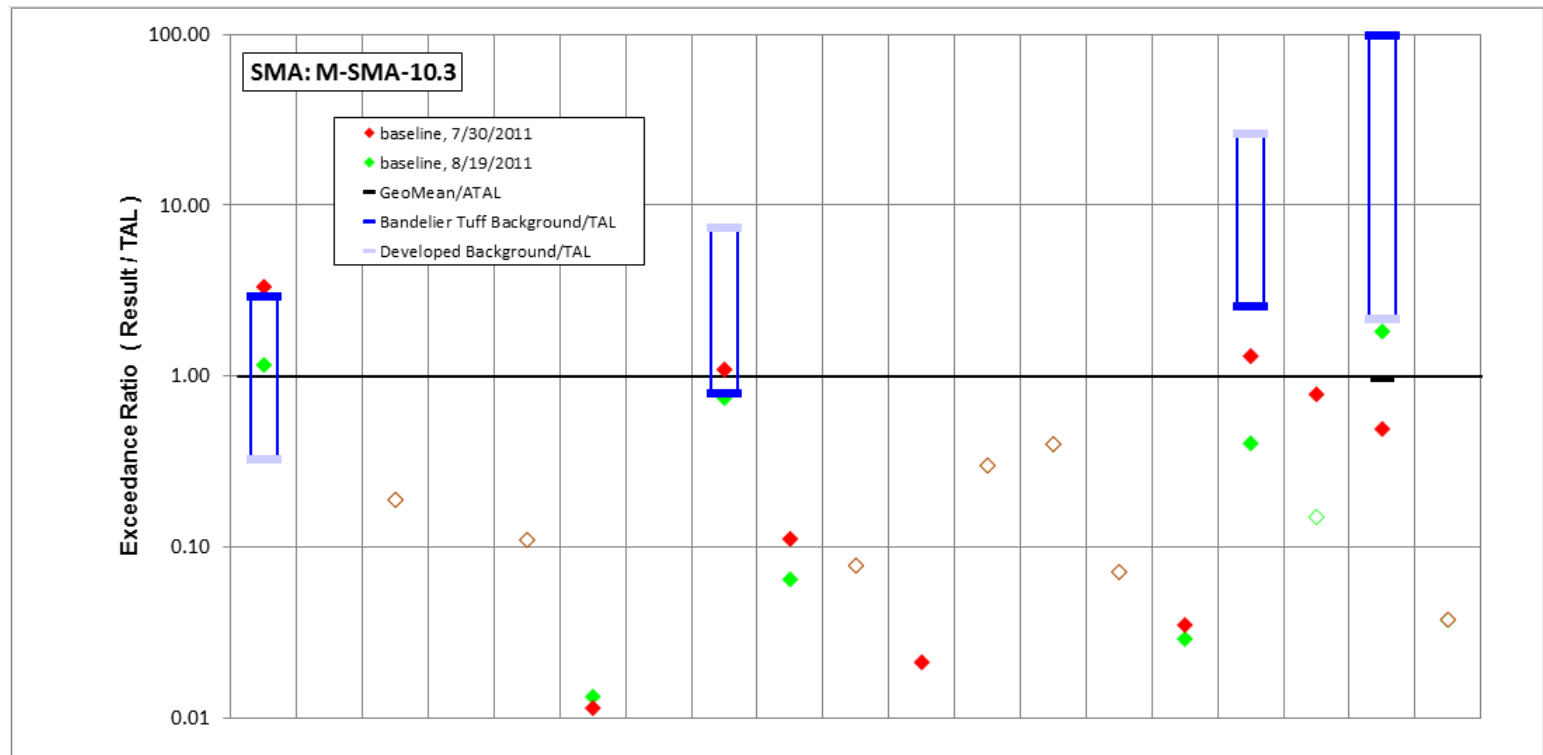


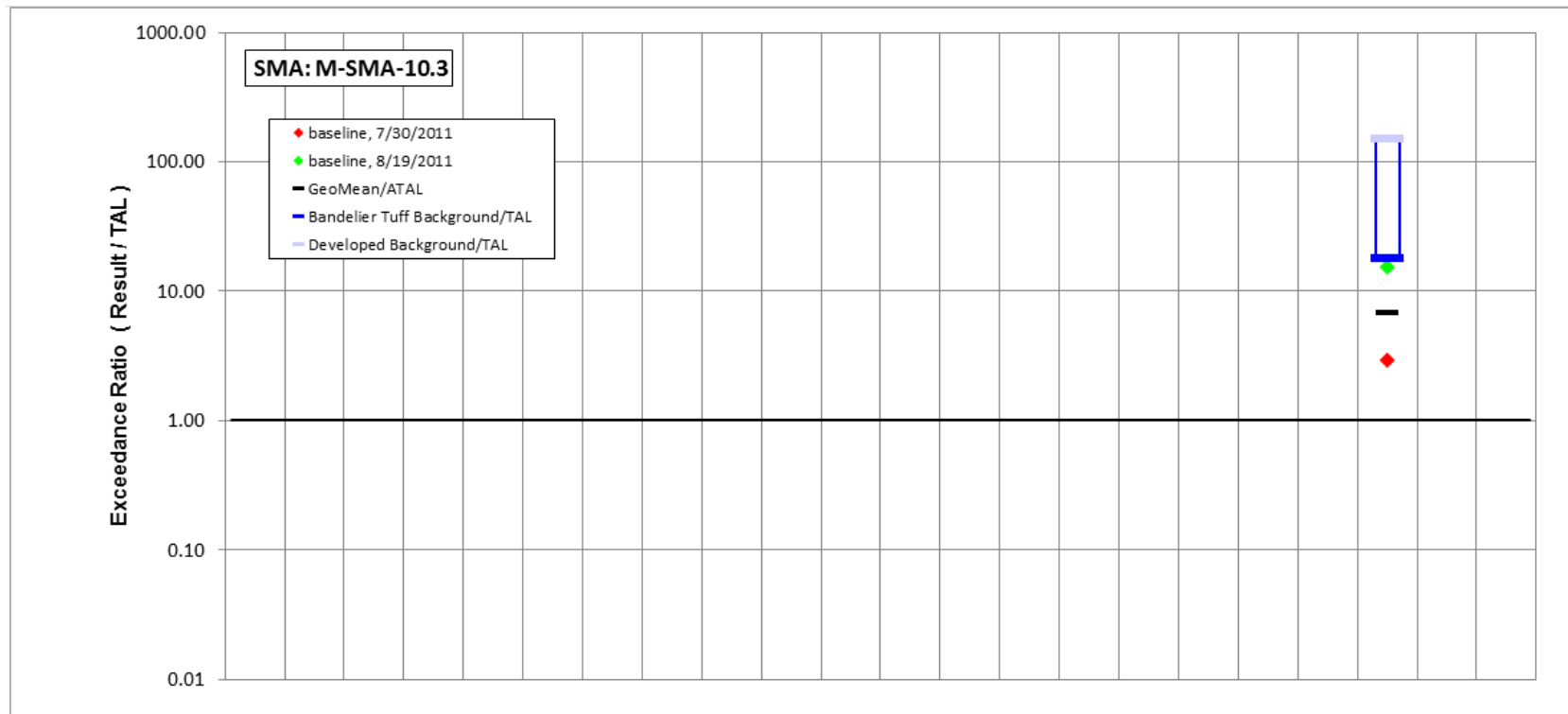
Figure 109-1 M-SMA-10.3 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	<b>Copper</b>	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	<b>Zinc</b>	Cyanide, weak acid dissociable	<b>Gross alpha</b>	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
<b>8/19/2011 result</b>	<b>873</b>	<i>1</i>	1.7	15	0.11	2.8	1.3	3.2	1.1	0.06	1.1	1.5	0.2	0.45	2.9	17	0.002	<b>27.4</b>	1.12
result / TAL	<b>1.2</b>	<i>0.002</i>	0.19	0.003	0.11	0.013	0.0013	0.74	0.065	0.078	0.0065	0.3	0.4	0.071	0.029	0.4	0.15	<b>1.8</b>	0.037
<b>7/30/2011 result</b>	<b>2500</b>	<i>1</i>	1.7	20.9	0.11	2.4	1.3	4.7	1.9	0.06	3.6	1.5	0.2	0.45	3.5	55	0.0078	7.36	1.13
result / TAL	<b>3.3</b>	<i>0.002</i>	0.19	0.0042	0.11	0.011	0.0013	<b>1.1</b>	0.11	0.078	0.021	0.3	0.4	0.071	0.035	<b>1.3</b>	0.78	0.49	0.038

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

**Figure 109-2 Inorganic analytical results summary plot for M-SMA-10.3**



	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	<b>Total PCB</b>	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	-	-
std value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6E-04	-	-
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
<b>8/19/2011 result</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>0.01</b>	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>15</b>	-	-
<b>7/30/2011 result</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>0.002</b>	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>2.9</b>	-	-

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 109-3 Organic analytical results summary plot for M-SMA-10.3

## 110.0 M-SMA-11.1: SWMU 35-016(o)

### 110.1 Site Descriptions

One historical industrial activity area is associated with M014, M-SMA-11.1: Site 35-016(o).

SWMU 35-016(o) is an active storm water system established in 1951 to collect and manage storm water runoff from the first laboratory and office building (35-02) constructed at TA-35. The three cast-iron storm drainlines (diameters not documented) channel storm water to three outfalls located on the east side of the mesa and discharge to the south slope of Mortandad Canyon, approximately 20 ft below the mesa edge. Effluent from floor drains in building 35-2 may have been discharged to this storm drain system. In addition, overflow from the septic system designated as SWMU 35-009(c) was discharged into Mortandad Canyon from two outfalls located at the east and west ends of septic system leach fields; the outfall at the east end of the leach field coincides with one of the SWMU 35-016(o) drainage channels. The SWMU 35-009(c) septic system was decommissioned in 1992 and underwent a VCA in 1996.

The project map (Figure 110-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

The Site boundary for SWMU 35-016(o) has been modified to match the boundary depicted in the administrative record for the Consent Order, which is the controlling authority for SWMU and AOC boundary definitions used in the IP. The Site boundary change was minor and did not affect the SMA boundary or sampler location. The updated boundary is shown on the project map (Figure 110-1) and the Site physical characteristic information listed in Attachment 4 has been updated.

### 110.2 Control Measures

Current discharge from the outfall is minimal and the potential for flow reaching the receiving waters is very low. There is no sign of erosion or sediment migration below the outfall pipe. The asphalt curbing serves to divert run-on away from this Permitted Feature. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 110-1).

**Table 110-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M01402010003	Established Vegetation - Grasses and Shrubs			X		CB
M01402020004	Established Vegetation - Forested/Needle Cast			X		CB
M01403090005	Berms - Curbing	X			X	CB
M01403100007	Berms - Gravel Bags	X			X	B
M01404060001	Channel/Swale - Riprap	X		X		CB
M01406020006	Check Dam - Log		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 110.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at M-SMA-11.1. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 110.4 Inspections and Maintenance

RG200.5 recorded one storm event at M-SMA-11.1 during the 2012 season. These rain events triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 110-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23404	06-04-2012
Storm Rain Event	BMP-28716	10-18-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 110-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-23982	Installed gravel bags M01403100007.	06-12-2012	8 day(s)	Maintenance conducted in timely manner.

### 110.5 Compliance Status

The Site associated with M-SMA-11.1 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 110-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 35-016(o)	Baseline Monitoring	Baseline Monitoring Extended	No Comment



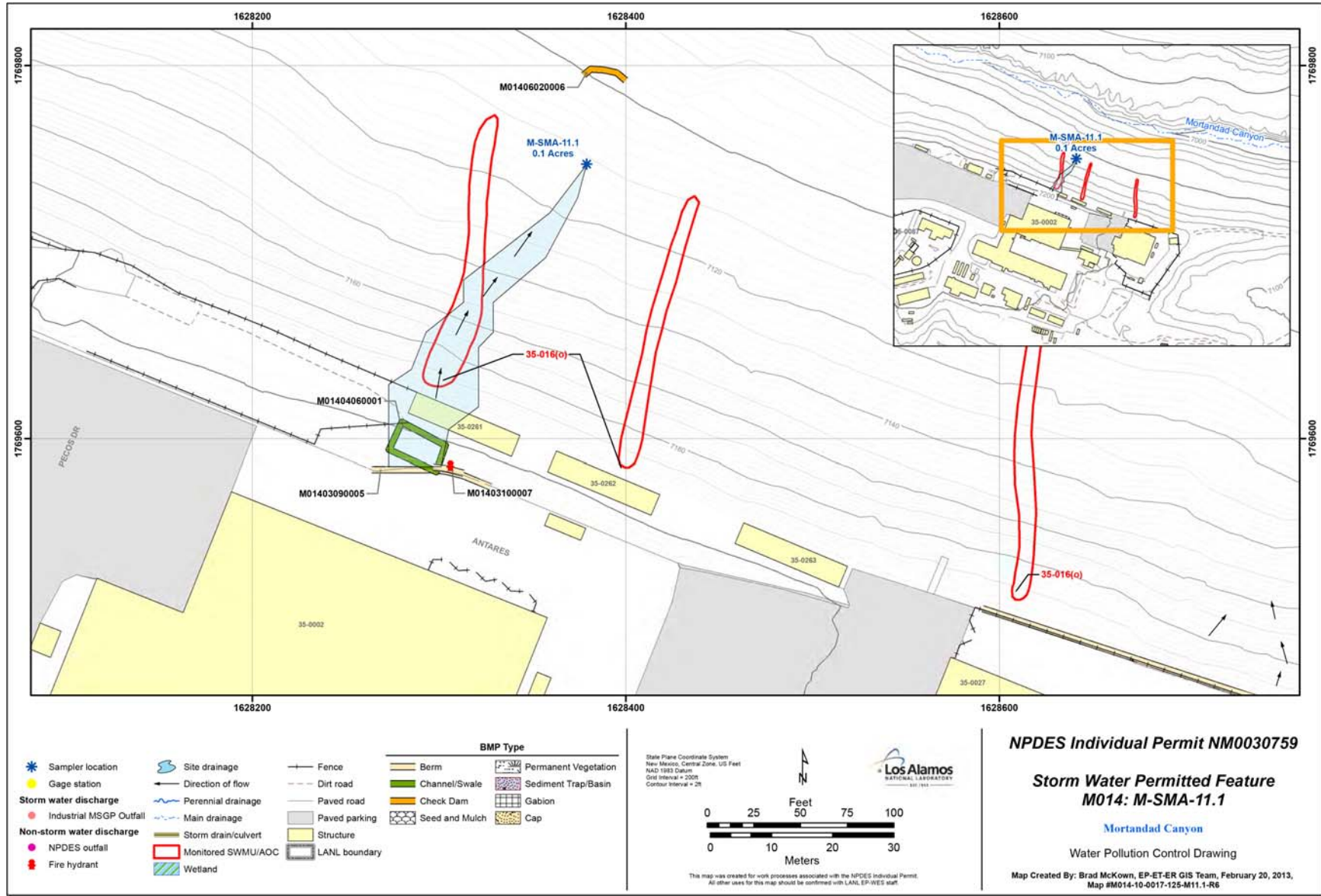


Figure 110-1 M-SMA-11.1 location map

## 111.0 M-SMA-12: SWMU 35-016(p)

### 111.1 Site Descriptions

One historical industrial activity area is associated with M015, M-SMA-12: Site 35-016(p).

SWMU 35-016(p) is an active storm water system that has handled storm water runoff from the roof of the Nuclear Safeguards Research Building (35-27) since the building was constructed in 1964. The north and east sides of building 35-27 are equipped with 6-in.-diameter roof leaders along which direct roof runoff into CMP storm drains. The storm drains connect to a storm drain manhole located approximately 25 ft northeast of the northeast corner of building 35-27. An 18-in.-diameter CMP storm drain originates at this manhole and extends northward toward the edge of Ten Site Mesa. The outfall is located 40 ft below the mesa edge on the south slope of Mortandad Canyon, approximately 60 ft north of the security fence around building 35-27.

The project map (Figure 111-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

The Site boundary for SWMU 35-016(p) has been modified to match the boundary depicted in the administrative record for the Consent Order, which is the controlling authority for SWMU and AOC boundary definitions used in the IP. The Site boundary change was minor and did not affect the SMA boundary or sampler location. The updated boundary is shown on the project map (Figure 111-1) and the Site physical characteristic information listed in Attachment 4 has been updated.

### 111.2 Control Measures

The curb on the northern edge of the parking area is controlling run-on at this Permitted Feature. The log check dams above the sampler are controlling runoff. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 111-1).

**Table 111-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M01502010002	Established Vegetation - Grasses and Shrubs			X		CB
M01502020003	Established Vegetation - Forested/Needle Cast			X		CB
M01503090004	Berms - Curbing	X			X	CB
M01506020001	Check Dam - Log		X		X	CB
M01506020006	Check Dam - Log		X		X	CB
M01506020007	Check Dam - Log		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 111.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at M-SMA-12. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 111.4 Inspections and Maintenance

RG200.5 recorded one storm event at M-SMA-12 during the 2012 season. These rain events triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 111-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23405	06-04-2012
Storm Rain Event	BMP-28717	10-18-2012

There were no maintenance activities conducted at M-SMA-12 in 2012.

### 111.5 Compliance Status

The Site associated with M-SMA-12 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 111-3 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 35-016(p)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

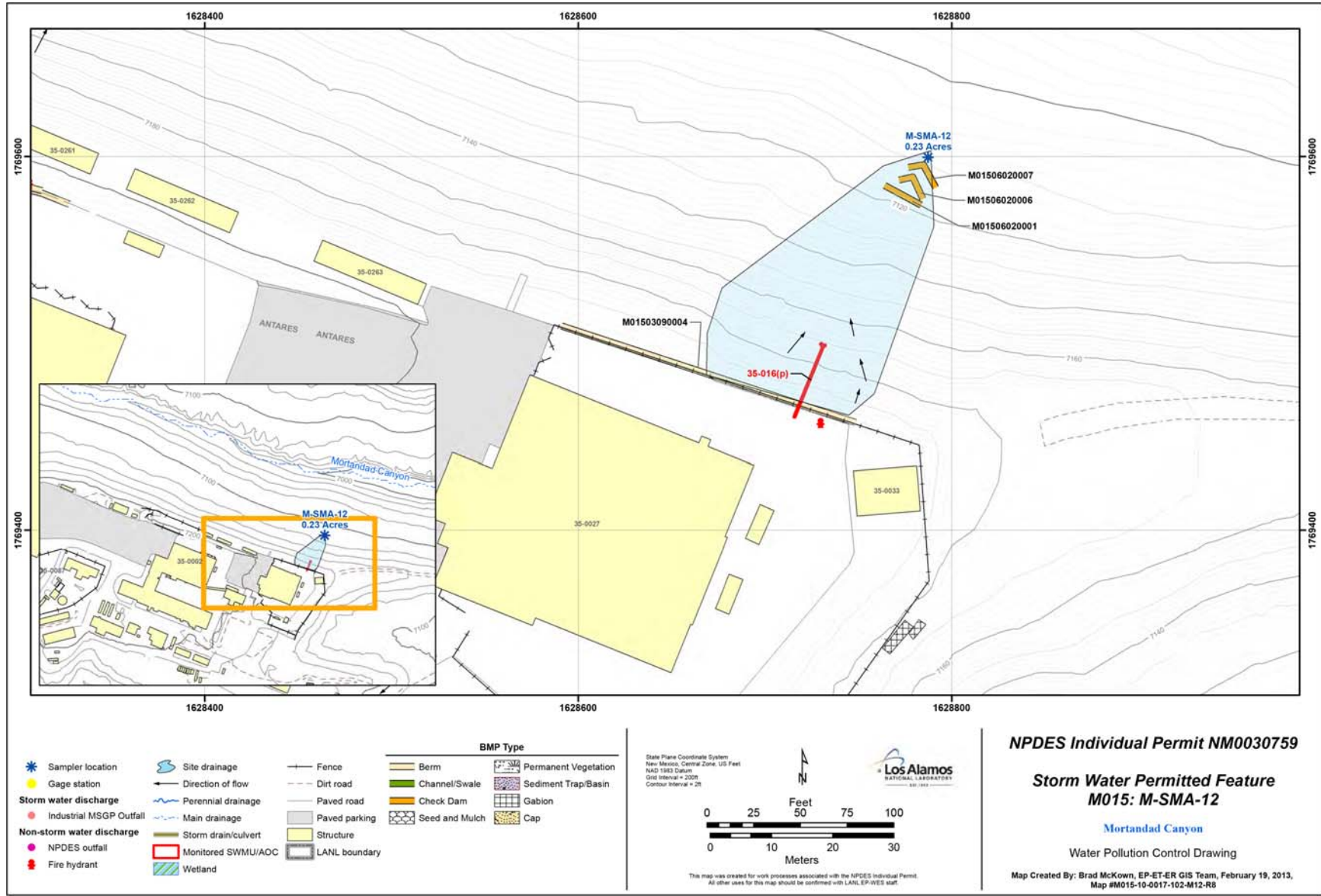


Figure 111-1 M-SMA-12 location map



## 112.0 M-SMA-12.5: SWMUs 05-005(b) and 05-006(c)

### 112.1 Site Descriptions

Two historical industrial activity areas are associated with M016, M-SMA-12.5: Sites 05-005(b) and 05-006(c).

SWMU 05-005(b) is an area of potentially contaminated soil associated with a former outfall located at the edge of Mortandad Canyon. The outfall, which is associated with building 05-0005, was identified during a 1987 former Environmental Project site reconnaissance. The outfall was located on the edge of the canyon, approximately 80 ft south of building 05-0005. This building, which is associated with SWMU 05-006(c), was used as a shop, a calibration facility, and a photographic darkroom. The building was used as a darkroom from 1944 to 1947 to process photographs of experiments conducted at the TA-05 firing sites. In 1952, building 05-0005 was used to calibrate high-range radiation meters. The building was operational from about 1944 to 1959 and was destroyed by burning in May 1960. The outfall is believed to have also operated from 1944 to 1959. The site currently contains no evidence of the outfall. A capped pipe is present at the ground surface at the former location of building 05-0005. This pipe may have been the drainline from the building. A drainage channel that collects most of the runoff from the site is present at the edge of the mesa. No evidence of significant erosion or runoff from the site was found, and storm water best management practices (BMPs), including straw wattles, are in place above and downslope of the site.

SWMU 05-006(c) is an area of potentially contaminated soil associated with the location of a former shop and darkroom, building 05-0005. The shop was 16 ft × 16 ft and the darkroom was 9 ft × 6 ft. The building operated from about 1944 to 1959. The structure was originally used to support firing site activities, including processing photographs of experiments conducted at the firing sites. In 1952, J Division temporarily used the building to calibrate high-range meters. A 1959 memorandum indicates this structure was contaminated with HE. This site is one of several areas of potential soil contamination at TA-05 identified during surveys conducted in 1958, 1959, and 1985. Potential soil contamination at these sites was reported to include HE and uranium. A 1959 list generated by the Laboratory's H-3 Group listed building 05-0005 as an HE-contaminated structure. Building 05-0005 was destroyed by burning on March 5, 1960. Cleanup of the site of the former building was included in the 1985 Los Alamos Site Characterization Program (LASCP). Surface debris, including wood, copper wire, scrap metal, and other building debris, was removed. No radioactive contamination was detected. A mound of burned debris, including charred wood and melted glass, was noted to be present at the site during an inspection in September 1994. Currently, a small amount of burned debris (charred wood, melted glass, and metal) is still present at the former location of building 05-0005. Also present is a capped pipe at the ground surface. The site slopes to the south toward the edge of the mesa. No evidence of significant erosion or runoff from the site was found, and storm water BMPs, including straw wattles, are in place above and downslope of the site.

The project map (Figure 112-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.



### 112.2 Control Measures

Run-on contributions to this Permitted Feature originate from the unpaved access road on the northern boundary of the SMA. Controls have been installed to mitigate this run-on source. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 112-1).

**Table 112-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M01601030011	Seed and Mulch - Hydromulch			X		B
M01602010001	Established Vegetation – Grasses and Shrubs			X		CB
M01603010009	Berms - Earthen	X			X	B
M01603010010	Berms - Earthen		X		X	B

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

### 112.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at M-SMA-12.5. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 112.4 Inspections and Maintenance

RG203 recorded four storm events at M-SMA-12.5 during the 2012 season. These rain events triggered four post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 112-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-22694	04-18-2012
Storm Rain Event	BMP-22888	05-01-2012
Storm Rain Event	BMP-24986	07-17-2012
Storm Rain Event	BMP-26263	08-07-2012
Storm Rain Event	BMP-28738	10-22-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 112-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-25567	Added seed and mulch to thin areas of hydromulch M01601030011.	07-30-2012	13 day(s)	Maintenance conducted in timely manner.

**112.5 Compliance Status**

The Sites associated with M-SMA-12.5 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 112-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 05-005(b)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment
SWMU 05-006(c)	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

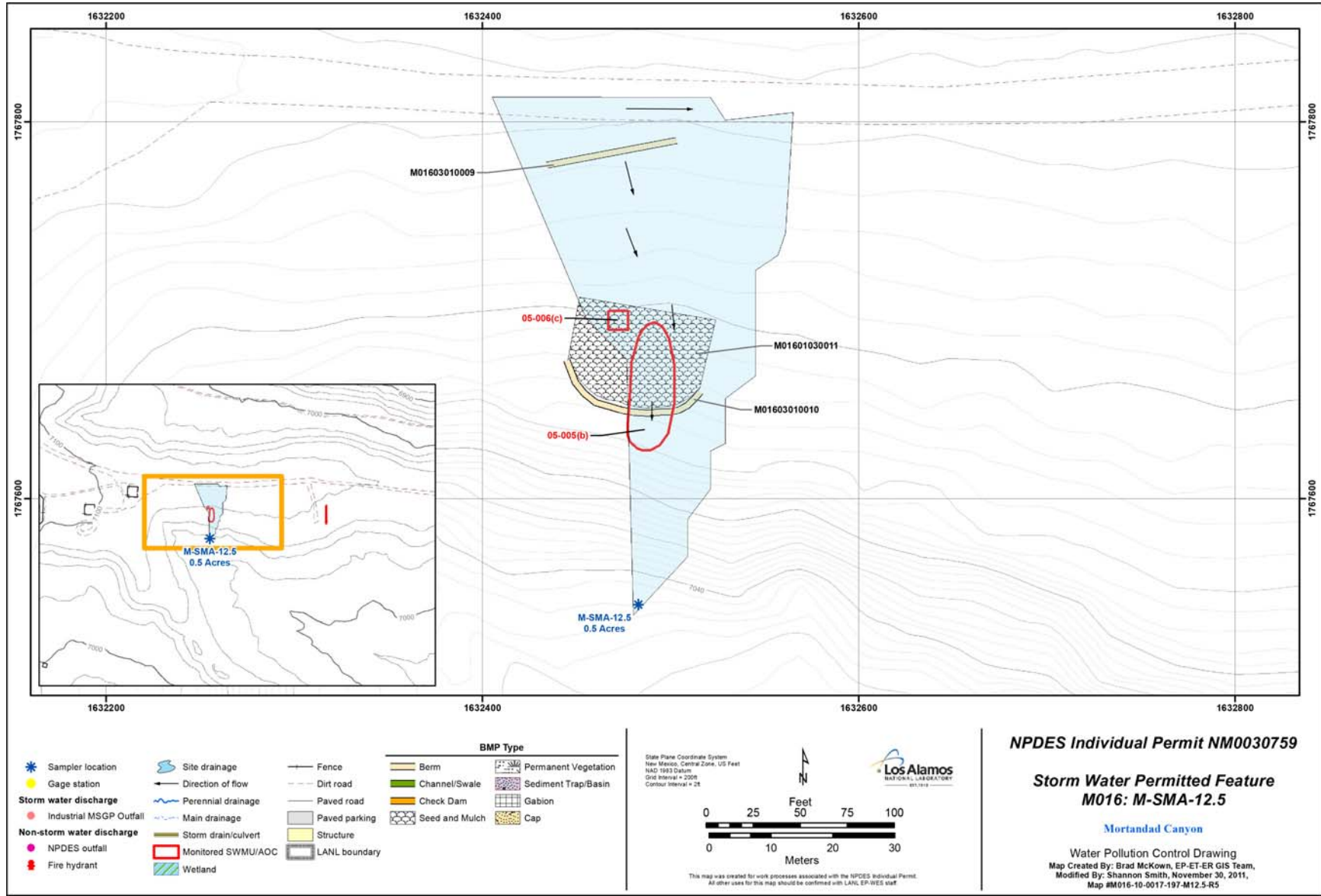


Figure 112-1 M-SMA-12.5 location map

### 113.0 M-SMA-12.6: SWMU 05-004

#### 113.1 Site Descriptions

One historical industrial activity area is associated with M017, M-SMA-12.6: Site 05-004.

SWMU 05-004 is a former septic tank (structure 05-0013), associated drainlines, and outfall that were located at the west end of TA-05 near the edge of Mortandad Canyon. From 1948 to 1949, the tank received industrial waste from a laboratory (building 05-0001). The tank was constructed in May 1948 and abandoned in place in December 1959. It was constructed of reinforced concrete and was 5 ft × 5 ft × 7 ft deep. As-built drawings show the presence of an inlet line running from building 05-0001 to the septic tank and an outlet line discharging south into an unnamed tributary of Mortandad Canyon.

Historical information shows the tank was free of radiation and HE contamination but notes it contained unspecified toxic chemicals. A 1952 memorandum states septic tank 05-0013 was no longer needed to support use of building 05-0001, and the structure was being returned to Engineering Division for disposition.

A 1959 memorandum states the tank had been monitored for radioactivity, and no radioactivity above background was found. A site inspection conducted in January 1974 identified the septic tank as an open concrete pit, at least 3-ft deep, and having a 3-ft × 3-ft opening with a rotted wooden cover. The wooden cover was replaced with a metal-grating cover. Notes from a radiation survey conducted at TA-05 during May 1976 describe structure 05-0013 as “an acid septic tank filled with liquid.” The types of materials used in building 05-0001 are not known. Building 05-0001 was inspected in 1959 and found to be free of contamination by toxic materials. A radiation survey of building 05-0001 in 1973 detected no radioactive contamination. During LASCPC activities conducted in 1985, building 05-0001 was determined to be free of radioactive and HE contamination and was removed. The 1985 LASCPC investigation confirmed removal of the tank and piping, and no evidence of radioactively contaminated soil was detected at that time. A 1988 survey detected gamma activity slightly above background. Notes taken during this survey described evidence of an outfall near the former location of structure 05-0013. A site inspection conducted in December 1994 noted the location of an approximately 2-ft-wide × 1-ft-deep outfall trench cut into the tuff. The trench, which was filled with plant debris, flowed to the south onto a natural bedrock rill/gully to the canyon. This trench presumably contained the discharge drainline that was removed. The site currently contains no evidence of the tank or drainline. The outfall trench previously noted at the site was located at the edge of the mesa. No evidence of significant erosion or runoff from the site was found, and storm water BMPs, including straw wattles, are in place above and downslope of the site.



M-SMA-12.6, Base Course Berm, M01703020005 (photo ID 7496-1)

Notes from a radiation survey conducted at TA-05 during May 1976 describe structure 05-0013 as “an acid septic tank filled with liquid.” The types of materials used in building 05-0001 are not known. Building 05-0001 was inspected in 1959 and found to be free of contamination by toxic materials. A radiation survey of building 05-0001 in 1973 detected no radioactive contamination. During LASCPC activities conducted in 1985, building 05-0001 was determined to be free of radioactive and HE contamination and was removed. The 1985 LASCPC investigation confirmed removal of the tank and piping, and no evidence of radioactively contaminated soil was detected at that time. A 1988 survey detected gamma activity slightly above background. Notes taken during this survey described evidence of an outfall near the former location of structure 05-0013. A site inspection conducted in December 1994 noted the location of an approximately 2-ft-wide × 1-ft-deep outfall trench cut into the tuff. The trench, which was filled with plant debris, flowed to the south onto a natural bedrock rill/gully to the canyon. This trench presumably contained the discharge drainline that was removed. The site currently contains no evidence of the tank or drainline. The outfall trench previously noted at the site was located at the edge of the mesa. No evidence of significant erosion or runoff from the site was found, and storm water BMPs, including straw wattles, are in place above and downslope of the site.

The project map (Figure 113-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 113.2 Control Measures

Run-on to the Permitted Feature originates on the dirt access road along the northern boundary of the SMA. Run-on from the main access road flows south on a secondary dirt road, possibly causing erosion in the northern portion of the SMA. Berms have been installed to mitigate this run-on contribution. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 113-1).

**Table 113-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M01701010013	Seed and Mulch - Seed and Wood Mulch			X		B
M01702010001	Established Vegetation - Grasses and Shrubs			X		CB
M01703010010	Berms - Earthen	X			X	B
M01703020005	Berms - Base Course	X			X	CB
M01703020006	Berms - Base Course	X			X	CB
M01703020007	Berms - Base Course	X			X	CB
M01703060012	Berms - Straw Wattles		X		X	B
M01706010008	Check Dam - Rock		X		X	CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

### 113.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at M-SMA-12.6. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 113.4 Inspections and Maintenance

RG203 recorded four storm events at M-SMA-12.6 during the 2012 season. These rain events triggered four post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 113-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-22695	04-18-2012
Storm Rain Event	BMP-22889	05-01-2012
Storm Rain Event	BMP-24987	07-17-2012
Storm Rain Event	BMP-26264	08-07-2012
Storm Rain Event	BMP-28739	10-22-2012



Maintenance activities conducted at the SMA are summarized in the following table.

**Table 113-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-25566	Installed new straw wattle M01703060012 directly above existing wattle -0009, which was retired.	07-26-2012	9 day(s)	Maintenance conducted in timely manner.
BMP-26405	Install seed and mulch M01701010013 to area of exiting hydromulch -0011, which was retired.	08-15-2012	8 day(s)	Maintenance conducted in timely manner.

### 113.5 Compliance Status

The Site associated with M-SMA-12.6 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 113-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 05-004	Baseline Monitoring	Baseline Monitoring Extended	No Comment

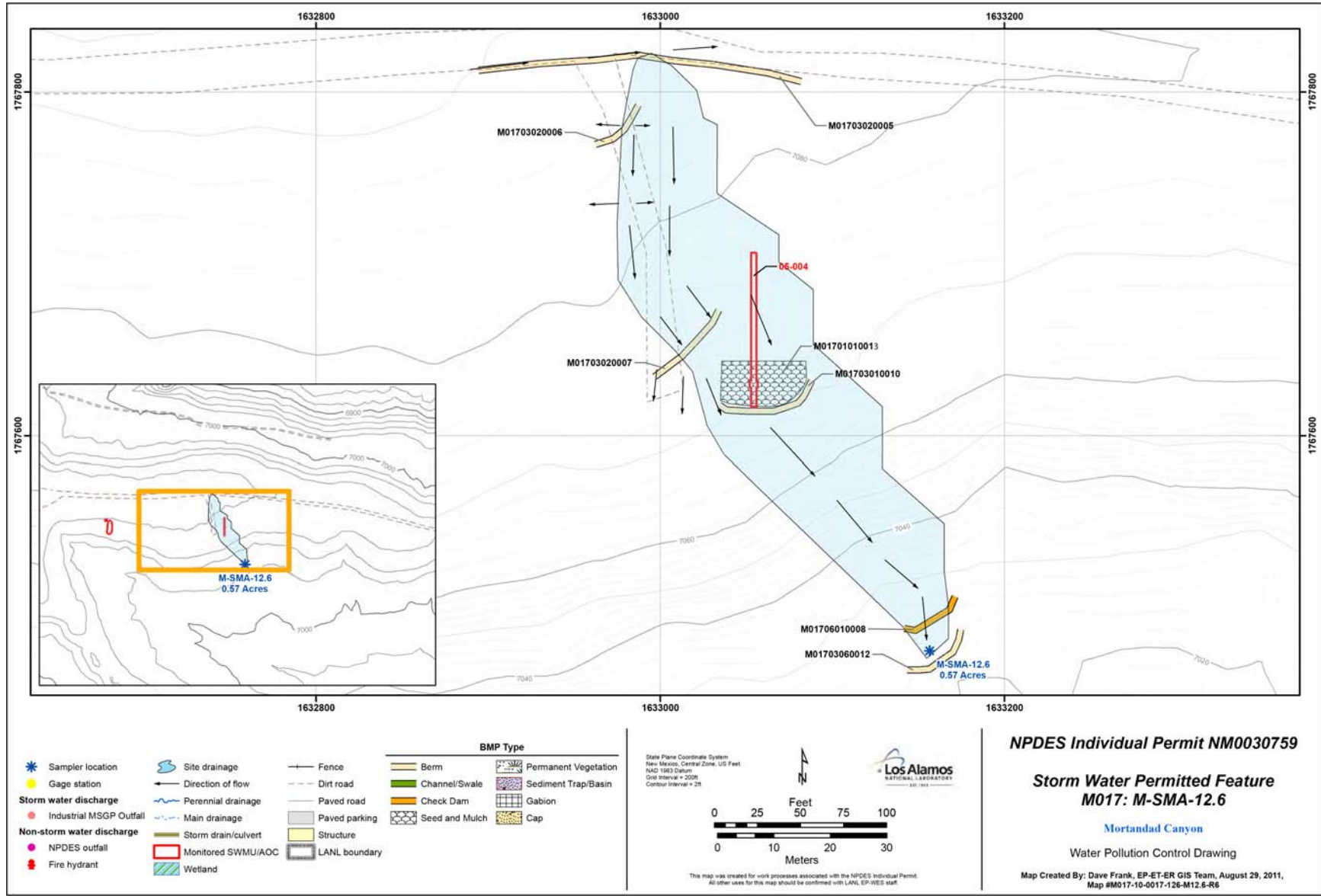


Figure 113-1 M-SMA-12.6 location map

## **114.0 M-SMA-12.7: SWMUs 05-002, 05-005(a), 05-006(b), and 05-006(e)**

### **114.1 Site Descriptions**

Four historical industrial activity areas are associated with M018, M-SMA-12.7: Sites 05-002, 05-005(a), 05-006(b), and 05-006(e).

SWMU 05-002 is a canyon-side disposal site associated with firing pits 1 and 2 [SWMUs 05-001(a) and 05-001(b)]. As debris from experimental shots at the firing pits accumulated, a bulldozer was used to push the debris northward to the edge of Mortandad Canyon. The debris zone extended to the canyon bottom. This site was used extensively for 3 yr. A 1976 radiation study showed contamination at this site. During 1985 LASCPC activities, visible surface shot debris was removed. Waste potentially disposed of at this site included shot debris, cables, wire, and trace amounts of lead, uranium, beryllium, cadmium, and uranium-contaminated aluminum or steel. During the 1985 LASCPC cleanup effort, all debris was removed from SWMU 05-002. SWMUs 05-001(a), 05-001(b), 05-002, and 05-006(h) are components of Consolidated Unit 05-001(a)-99 and are associated with the historical Beta Site. Beta Site was established in 1944 as an adjunct test-firing site to Alpha Site (Consolidated Unit 04-001-99) for Manhattan Project personnel. After firing activities were halted in the late 1940s, other Laboratory groups used the site for various experiments involving radiation. In 1959, the experimental reactors Little Eva and Godiva operated at Beta Site. Beta Site officially ceased operations in 1959 but was used for periodic testing until the 1970s. TA-05 currently is used as a security buffer zone. In 1959, H Division listed structures 05-07 and 05-15 as contaminated with HE. However, other surveys conducted in 1959 to determine the presence, if any, of radioactive, HE, and toxic contamination at TA-05 showed that all structures were free of radioactive contamination. Structures 05-07 and -15 showed no HE contamination. Both pits became inactive and were left in place in 1959. In 1976, no detectable radiation was measured at structures 05-7 or -15. LASCPC D&D activities in 1985 addressed structures 05-7 and 05-15 and included radiological monitoring, picking up debris, demolishing buildings, removing structures, exhuming underground utilities, and contouring the areas. The LASCPC did not address nonradioactive contamination. Most of the 1985 D&D work revolved around a central area where depleted uranium contamination was found. The area encompassed building 05-9, structures 05-7 and 05-15, and a platform not included in this consolidated unit.

SWMU 05-005(a) was a French drain that ran north from the firing site control building (building 05-4) toward Mortandad Canyon. The drain was constructed in 1945 and became inactive along with the control building in 1959. The control building was removed in 1960; however, the drainline was not removed until 1985 during the LASCPC. Radioactive contamination associated with building 05-4 was discovered during the 1985 LASCPC; it is not known if radionuclides or chemicals were discharged to the drainline. The entire area was razed when building 05-4 was removed in 1985, spreading potential contaminants from the control building, drainline, and platform so that they are not discernible among the SWMUs. SWMU 05-005(a) along with SWMUs 05-006(b) and 05-006(e) is a component of Consolidated Unit 05-005(a)-00. SWMUs 05-005(a), 05-006(b), and 05-006(e) are components of Consolidated Unit 05-005(a)-00 and are associated with the historical Beta Site established in 1944 as an adjunct test-firing site to Alpha Site (Consolidated Unit 04-001-99) for Manhattan Project personnel. After firing activities were halted in the late 1940s, other Laboratory groups used the site for various experiments involving radiation. In 1959, the experimental reactors Little Eva and Godiva operated at Beta Site. Beta Site officially ceased operations in 1959 but was used for periodic testing until the 1970s. The LASCPC did not address nonradioactive contamination. Most of the 1985 D&D work revolved around a central area where depleted-uranium contamination was found. The area encompassed building 05-9, structures 05-7 and 05-15, and a platform not included in this consolidated unit. TA-05 is currently used

as a security buffer zone and contains physical support facilities, such as an electrical substation, test wells, several archeological sites, and environmental monitoring areas.

SWMU 05-006(b) is an area of potentially contaminated soil at the location of former control building 05-4. During 1985 LASCPC D&D activities at TA-05, uranium-contaminated soil was encountered at the former site of building 05-4. The entire area was razed when building 05-4 was removed in 1985, spreading potential contaminants from the control building, drainline, and platform so that they are not discernible among the SWMUs. SWMU 05-006(b) along with SWMUs 05-005(a) and 05-006(e) is a component of Consolidated Unit 05-005(a)-00. SWMUs 05-005(a), 05-006(b) and 05-006(e) are components of Consolidated Unit 05-005(a)-00 and are associated with the historical Beta Site established in 1944 as an adjunct test-firing site to Alpha Site (Consolidated Unit 04-001-99) for Manhattan Project personnel. After firing activities were halted in the late 1940s, other Laboratory groups used the site for various experiments involving radiation. In 1959, the experimental reactors Little Eva and Godiva operated at Beta Site. Beta Site officially ceased operations in 1959 but was used for periodic testing until the 1970s. The LASCPC did not address nonradioactive contamination. Most of the 1985 D&D work revolved around a central area where depleted uranium contamination was found. The area encompassed building 05-9, structures 05-7, and 05-15, and a platform not included in this consolidated unit. TA-05 is currently used as a security buffer zone and contains physical support facilities, such as an electrical substation, test wells, several archeological sites, and environmental monitoring areas.

SWMU 05-006(e) is an area of potentially contaminated soil associated with a former platform (structure 05-19) that was adjacent to former control building 05-4. The platform was a 6-ft × 6-ft wood structure that was mounted 26 ft above the ground on two 45-ft-tall wood poles. It structure was built in 1953 and left in place until 1959. The entire area was razed when building 05-4 was removed in 1985, spreading potential contaminants from the control building, drainline, and platform so that they are not discernible among the SWMUs. SWMU 05-006(e) along with SWMUs 05-005(a) and 05-006(b) is a component of Consolidated Unit 05-005(a)-00. SWMUs 05-005(a), 05-006(b) and 05-006(e) are components of Consolidated Unit 05-005(a)-00 and are associated with the historical Beta Site established in 1944 as an adjunct test-firing site to Alpha Site (Consolidated Unit 04-001-99) for Manhattan Project personnel. After firing activities were halted in the late 1940s, other Laboratory groups used the site for various experiments involving radiation. In 1959, the experimental reactors Little Eva and Godiva operated at Beta Site. Beta Site officially ceased operations in 1959 but was used for periodic testing until the 1970s. The LASCPC did not address nonradioactive contamination. Most of the 1985 D&D work revolved around a central area where depleted uranium contamination was found. The area encompassed building 05-9, structures 05-7 and 05-15, and a platform not included in this consolidated unit. TA-05 is currently used as a security buffer zone and contains physical support facilities, such as an electrical substation, test wells, several archeological sites, and environmental monitoring areas.

The project map (Figure 114-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 114.2 Control Measures

Run-on enters this Permitted Feature from the unpaved access road on the southern boundary. Some of the run-on is diverted to the west away from the area by a natural flow path. A berm is installed just north of this road to control run-on that is not diverted to the drainage channel west of the SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 114-1).

**Table 114-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M01802010002	Established Vegetation - Grasses and Shrubs			X		CB
M01803010008	Berms - Earthen	X			X	CB
M01803060010	Berms - Straw Wattles	X			X	B
M01803060011	Berms - Straw Wattles	X			X	B
M01806020009	Check Dam - Log		X		X	CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

### 114.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at M-SMA-12.7. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 114.4 Inspections and Maintenance

RG203 recorded four storm events at M-SMA-12.7 during the 2012 season. These rain events triggered four post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 114-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-22696	04-18-2012
Storm Rain Event	BMP-22890	05-01-2012
Storm Rain Event	BMP-24988	07-17-2012
Storm Rain Event	BMP-26265	08-08-2012
Storm Rain Event	BMP-28740	10-22-2012

Maintenance activities conducted at the SMA are summarized in the following table.



**Table 114-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-26404	Installed new straw wattle M01803060011 directly above existing wattle -0006, which was retired.	08-13-2012	5 day(s)	Maintenance conducted in timely manner.

**114.5 Compliance Status**

The Sites associated with M-SMA-12.7 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 114-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 05-002	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 05-005(a)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 05-006(b)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 05-006(e)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

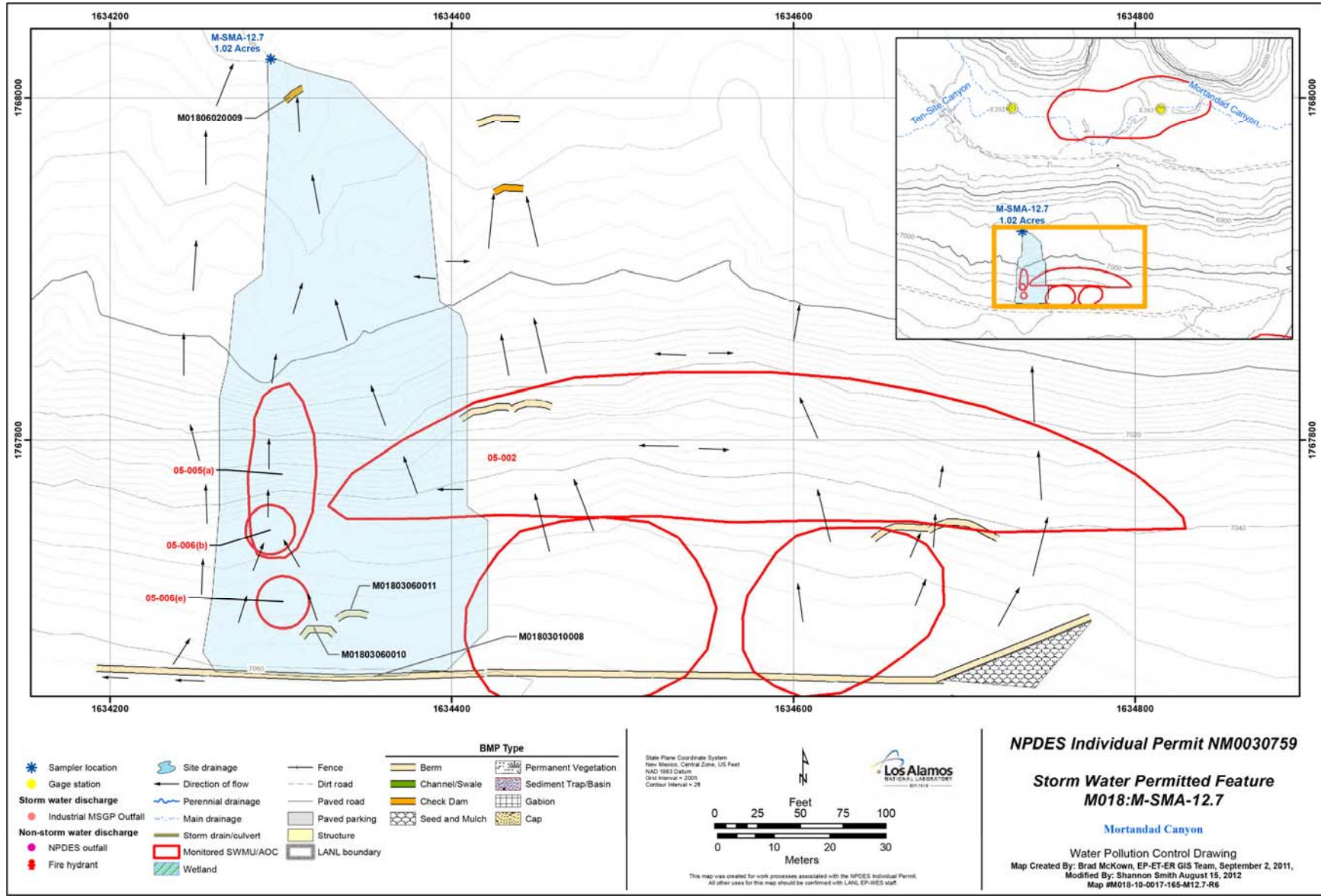


Figure 114-1 M-SMA-12.7 location map

## **115.0 M-SMA-12.8: SWMUs 05-001(a) and 05-002**

### **115.1 Site Descriptions**

Two historical industrial activity areas are associated with M019, M-SMA-12.8: Sites 05-001(a) and 05-002.

SWMU 05-001(a) is a former steel barricade firing pit, designated No. 1 (structure 05-07). The site was used for implosion tests from 1944 to 1947. During the 1985 LASCPC cleanup effort at structure 05-07, steel plates around the pit, a control box, and a wood platform were removed. No contamination was detected on the surface of the structures or in the soil directly beneath the firing pit. However, because soil in the area was contaminated in several spots, structure 05-7 and other material were taken to TA-54 for disposal. The pit was cleaned of all debris, backfilled, and contoured. SWMUs 05-001(a), 05-001(b), 05-002, and 05-006(h) are components of Consolidated Unit 05-001(a)-99 and are associated with the historical Beta Site. Beta Site was established in 1944 as an adjunct test-firing site to Alpha Site (Consolidated Unit 04-001-99) for Manhattan Project personnel. After firing activities were halted in the late 1940s, other Laboratory groups used the site for various experiments involving radiation. In 1959, the experimental reactors Little Eva and Godiva operated at Beta Site. Beta Site officially ceased operations in 1959 but was used for periodic testing until the 1970s. TA-05 currently is used as a security buffer zone. In 1959, H Division listed structures 05-07 and 05-15 as contaminated with HE. However, other surveys conducted in 1959 to determine the presence, if any, of radioactive, HE, and toxic contamination at TA-05 showed that all structures were free of radioactive contamination. Structures 05-07 and 05-15 showed no HE contamination. Both pits became inactive and were left in place in 1959. In 1976, no detectable radiation was measured at structures 05-7 or 05-15. LASCPC D&D activities in 1985 addressed structures 05-7 and 05-15 and included radiological monitoring, picking up debris, demolishing buildings, removing structures, exhuming underground utilities, and contouring the areas. The LASCPC did not address nonradioactive contamination. Most of the 1985 D&D work revolved around a central area where depleted uranium contamination was found. The area encompassed building 05-9, structures 05-7, and 05-15, and a platform not included in this consolidated unit.

SWMU 05-002 is a canyon-side disposal site associated with firing pits 1 and 2 [SWMUs 05-001(a) and 05-001(b)]. As debris from experimental shots at the firing pits accumulated, a bulldozer was used to push the debris northward to the edge of Mortandad Canyon. The debris zone extended to the canyon bottom. This site was used extensively for 3 yr. A 1976 radiation study showed contamination at this site. During 1985 LASCPC activities, visible surface shot debris was removed. Waste potentially disposed of at this site included shot debris, cables, wire, and trace amounts of lead, uranium, beryllium, cadmium, and uranium-contaminated aluminum or steel. During the 1985 LASCPC cleanup effort, all debris was removed from SWMU 05-002. SWMUs 05-001(a), 05-001(b), 05-002, and 05-006(h) are components of Consolidated Unit 05-001(a)-99 and are associated with the historical Beta Site. Beta Site was established in 1944 as an adjunct test-firing site to Alpha Site (Consolidated Unit 04-001-99) for Manhattan Project personnel. After firing activities were halted in the late 1940s, other Laboratory groups used the site for various experiments involving radiation. In 1959, the experimental reactors Little Eva and Godiva operated at Beta Site. Beta Site officially ceased operations in 1959 but was used for periodic testing until the 1970s. TA-05 currently is used as a security buffer zone. In 1959, H Division listed structures 05-07 and 05-15 as contaminated with HE. However, other surveys conducted in 1959 to determine the presence, if any, of radioactive, HE, and toxic contamination at TA-05 showed that all structures were free of radioactive contamination. Structures 05-07 and 05-15 showed no HE contamination. Both pits became inactive and were left in place in 1959. In 1976, no detectable radiation was measured at structures 05-7 or 05-15. LASCPC D&D activities in 1985 addressed structures

05-7 and 05-15 and included radiological monitoring, picking up debris, demolishing buildings, removing structures, exhuming underground utilities, and contouring the areas. The LASCP did not address nonradioactive contamination. Most of the 1985 D&D work revolved around a central area where depleted-uranium contamination was found. The area encompassed Building 05-9, structures 05-7 and 05-15, and a platform not included in this consolidated unit.

The project map (Figure 115-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 115.2 Control Measures

Grading and maintenance on the unpaved road in the southern headwaters of this SMA have resulted in the formation of a berm along the road. Run-on to the area from the access road is effectively controlled by this berm. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 115-1).

**Table 115-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M01902010002	Established Vegetation - Grasses and Shrubs			X		CB
M01903010003	Berms - Earthen	X			X	CB
M01903060008	Berms - Straw Wattles		X		X	B
M01903060009	Berms - Straw Wattles		X		X	B
M01906020006	Check Dam - Log		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 115.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at M-SMA-12.8. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 115.4 Inspections and Maintenance

RG203 recorded four storm events at M-SMA-12.8 during the 2012 season. These rain events triggered four post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 115-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-22697	04-18-2012
Storm Rain Event	BMP-22891	05-01-2012
Storm Rain Event	BMP-24989	07-17-2012
Storm Rain Event	BMP-26266	08-08-2012
Storm Rain Event	BMP-28741	10-22-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 115-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-26403	Installed new straw wattle M01903060009 directly above existing wattle -0007, which was retired.	08-13-2012	5 day(s)	Maintenance conducted in timely manner.

**115.5 Compliance Status**

The Sites associated with M-SMA-12.8 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 115-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 05-001(a)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 05-002	Baseline Monitoring	Baseline Monitoring Extended	No Comment



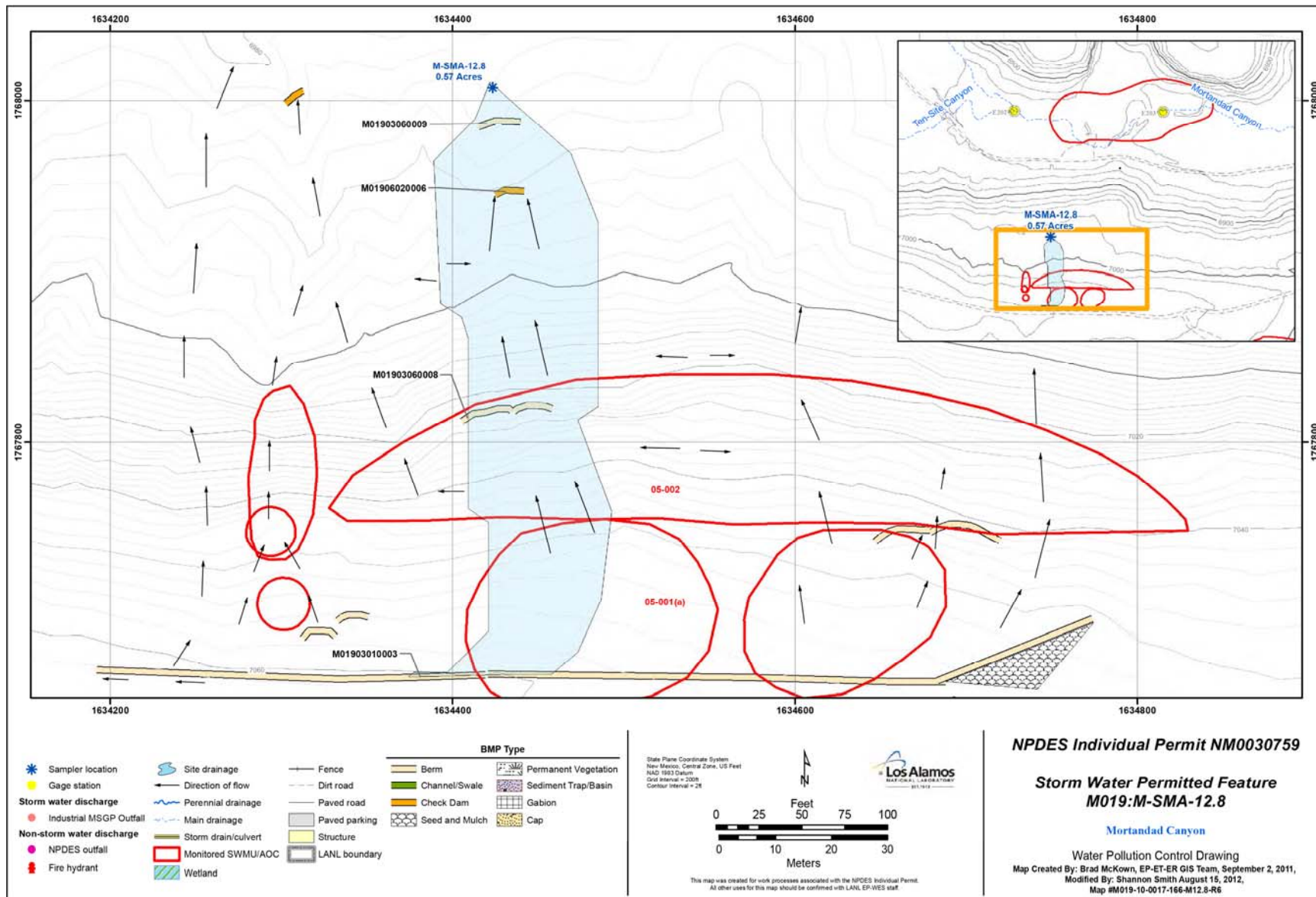


Figure 115-1 M-SMA-12.8 location map

## 116.0 M-SMA-12.9: SWMUs 05-001(b) and 05-002

### 116.1 Site Descriptions

Two historical industrial activity areas are associated with M020, M-SMA-12.9: Sites 05-001(b) and 05-002.

SWMU 05-001(b) is a former steel barricade firing pit, designated No. 2 (structure 05-15), which is associated with the historical Beta Site at TA-05. The pit was constructed in 1944 and was taken out of service in 1959. Experimental shots were set up at the site and fired on open ground. The shots used HE as an energy source. As debris accumulated, a bulldozer cleared the pit area by pushing scrap and debris north to the edge of Mortandad Canyon. The shrapnel zone included the canyon sides, canyon bottom, and about 200 ft around the firing pits. During 1985 D&D activities, the firing pit was removed. During its removal, uranium contamination was found in the soil to a depth of 15 ft. The area was decontaminated and backfilled with clean soil. Following the 2000 Cerro Grande Fire, erosion control measures (straw wattles) were installed above the site to divert run-on, at the mesa's edge, within the north-facing drainage, and on the lower bench for sediment retention. Within 1 yr after the fire, the site was in good condition, with a vegetative cover of approximately 70%. The area was stable, with minimal evidence of sediment migration.



M-SMA-12.9, Permanent Vegetation Grasses and Shrubs, M02002010002 (photo ID 7477-2)

SWMU 05-002 is a canyon-side disposal site associated with firing pits 1 and 2 [SWMUs 05-001(a) and 05-001(b)]. As debris from experimental shots at the firing pits accumulated, a bulldozer was used to push the debris northward to the edge of Mortandad Canyon. The debris zone extended to the canyon bottom. This site was used extensively for 3 yr. A 1976 radiation study showed contamination at this site. During 1985 LASC activities, visible-surface shot debris was removed. Waste potentially disposed of at this site included shot debris, cables, wire, and trace

amounts of lead, uranium, beryllium, cadmium, and uranium-contaminated aluminum or steel. During the 1985 LASC cleanup effort, all debris was removed from SWMU 05-002. SWMUs 05-001(a), 05-001(b), 05-002, and 05-006(h) are components of Consolidated Unit 05-001(a)-99 and are associated with the historical Beta Site. Beta Site was established in 1944 as an adjunct test-firing site to Alpha Site (Consolidated Unit 04-001-99) for Manhattan Project personnel. After firing activities were halted in the late 1940s, other Laboratory groups used the site for various experiments involving radiation. In 1959, the experimental reactors Little Eva and Godiva operated at Beta Site. Beta Site officially ceased operations in 1959 but was used for periodic testing until the 1970s. TA-05 currently is used as a security buffer zone. In 1959, H Division listed structures 05-07 and 05-15 as contaminated with HE. However, other surveys conducted in 1959 to determine the presence, if any, of radioactive, HE, and toxic contamination at TA-05 showed that all structures were free of radioactive contamination. Structures 05-07 and 05-15 showed no HE contamination. Both pits became inactive and were left in place in 1959. In 1976, no detectable radiation was measured at structures 05-7 or 05-15. LASC D&D activities in 1985 addressed structures 05-7 and 05-15 and included radiological monitoring, picking up debris, demolishing buildings, removing structures, exhuming underground utilities, and contouring the areas. The LASC did not address nonradioactive contamination. Most of the 1985 D&D work revolved around

a central area where depleted uranium contamination was found. The area encompassed building 05-9, structures 05-7 and 05-15, and a platform not included in this consolidated unit.

The project map (Figure 116-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 116.2 Control Measures

Run-on has the potential to contribute storm water to this SMA from the unpaved access road and the pullout on the northern boundary of the SMA. Run-on is diverted away from the SMA via a natural channel that runs to the north along the eastern side of the SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 116-1).

**Table 116-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M02001030009	Seed and Mulch - Hydromulch			X		B
M02002010002	Established Vegetation - Grasses and Shrubs			X		CB
M02003010005	Berms - Earthen	X			X	CB
M02003010008	Berms - Earthen	X			X	B
M02003060010	Berms - Straw Wattles		X		X	B
M02003060011	Berms - Straw Wattles		X		X	B

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

### 116.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at M-SMA-12.9. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 116.4 Inspections and Maintenance

RG203 recorded four storm events at M-SMA-12.9 during the 2012 season. These rain events triggered four post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 116-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-22698	04-18-2012
Storm Rain Event	BMP-22892	05-01-2012
Storm Rain Event	BMP-24990	07-17-2012
Storm Rain Event	BMP-26267	08-08-2012
Storm Rain Event	BMP-28742	10-22-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 116-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-25592	Installed new wattle M02003060010 directly above existing wattle -0003, which was retired.	07-24-2012	7 day(s)	Maintenance conducted in timely manner.
BMP-26402	Installed new straw wattle M02003060011 directly above exiting wattle -0007, which was retired.	08-13-2012	5 day(s)	Maintenance conducted in timely manner.

### 116.5 Compliance Status

The Sites associated with M-SMA-12.9 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 116-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 05-001(b)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 05-002	Baseline Monitoring	Baseline Monitoring Extended	No Comment



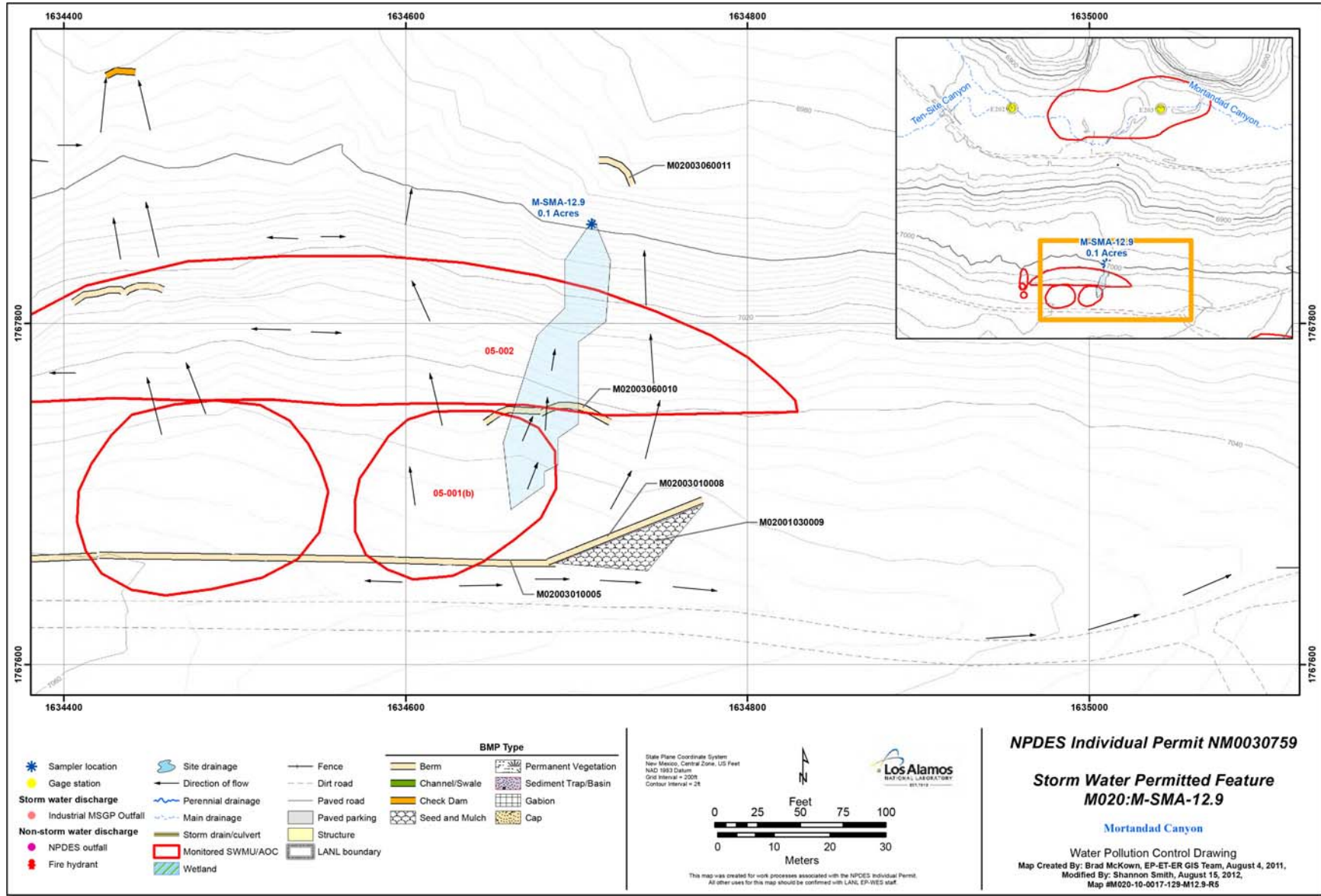


Figure I16-1 M-SMA-12.9 location map

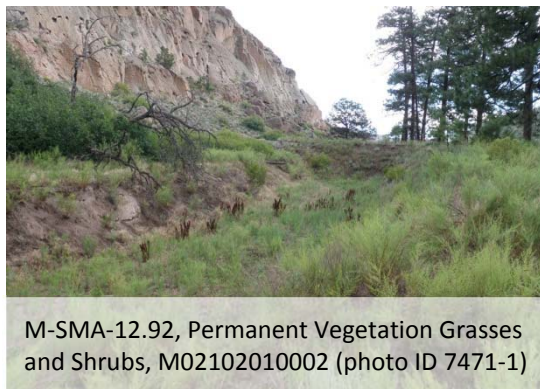


## 117.0 M-SMA-12.92: SWMU 00-001

### 117.1 Site Descriptions

One historical industrial activity area is associated with M021, M-SMA-12.92: Site 00-001.

SWMU 00-001 is the area of the historical and current sediment traps in Mortandad Canyon. The traps are excavated areas below the prevailing grade of the ephemeral stream channel that serve as surface water–containment basins to slow the flow of water as it moves down the canyon. The water consists of storm water runoff and industrial effluent. Water flows into the first trap and is retained temporarily, allowing heavier sediments to settle out. When the first trap fills, water flows into two successive traps, allowing more sediment to settle out. The site is approximately 900 ft long × 200 ft wide along the Mortandad Canyon stream channel downstream from the confluence of Mortandad and Ten Site Canyons. The two original traps were built in 1976 with a capacity of approximately 20,000 gal. In 1980, a third trap was built with a capacity of approximately 225,000 gal. The current trap configuration was built in 1986 and was expanded in 1988 as excavated basins surrounded by U-shaped berms built from the excavated alluvium. Trap 1, the upstream basin, has a capacity of approximately 286,000 gal. Trap 2, the next trap downstream, has a capacity of 628,000 gal. Trap 3, the downstream trap, has a capacity of 287,000 gal. The berms were planted with vegetation to prevent erosion. The three basins were reexcavated in 1992 after they were filled following several storms. Sediment from the traps was stockpiled next to the traps. The primary contributor of effluent discharge to Mortandad Canyon is the TA-50 RLWTF, which currently is permitted under NPDES. Other releases into the canyon include effluent from NPDES-permitted outfalls at TA-03 and TA-35 and various historical releases from TA-35 into Ten Site Canyon. The wastewater effluent contains some low-level radionuclides and may potentially contain hazardous constituents. As effluent moves downstream, most residual radionuclides are bound or adsorbed onto bed sediments. The contaminated sediments are subject to transport by additional releases of effluent or by storm water runoff. The sediment traps are approximately 1.5 mi downstream from the TA-50 RLWTF outfall and about 1.4 mi upstream from the Laboratory boundary. Potential contaminants at this Site include organic chemicals, inorganic chemicals, and radionuclides. Environmental surveillance studies in 1987, 1988, and 1991 showed low-level radionuclide contamination of the sediments in and around SWMU 00-001. In addition, radionuclides have been found in the small shallow aquifer located in the canyon alluvium. Sediments from the first two traps were analyzed in 1987 using the toxicity characteristic leaching procedure (TCLP) to characterize any potential hazardous wastes. No hazardous wastes were detected.



The project map (Figure 117-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 117.2 Control Measures

The associated historical industrial activity is the existing sediment traps. They are installed to reduce sediment from discharges upstream of the SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 117-1).

**Table 117-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M02102010002	Established Vegetation - Grasses and Shrubs			X		CB
M02105010001	Sediment Traps and Basins - Sediment Trap		X		X	CB
M02105010003	Sediment Traps and Basins - Sediment Trap		X		X	CB
M02105010004	Sediment Traps and Basins - Sediment Trap	X			X	CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

**117.3 Storm Water Monitoring**

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at M-SMA-12.92. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

**117.4 Inspections and Maintenance**

RG203 recorded four storm events at M-SMA-12.92 during the 2012 season. These rain events triggered four post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 117-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-22699	04-18-2012
Storm Rain Event	BMP-22893	05-01-2012
Storm Rain Event	BMP-24991	07-17-2012
Storm Rain Event	BMP-26268	08-08-2012
Storm Rain Event	BMP-28743	10-22-2012

There were no maintenance activities conducted at M-SMA-12.92 in 2012.

**117.5 Compliance Status**

The Site associated with M-SMA-12.92 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 117-3 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 00-001	Baseline Monitoring Extended	Baseline Monitoring Extended	No Comment

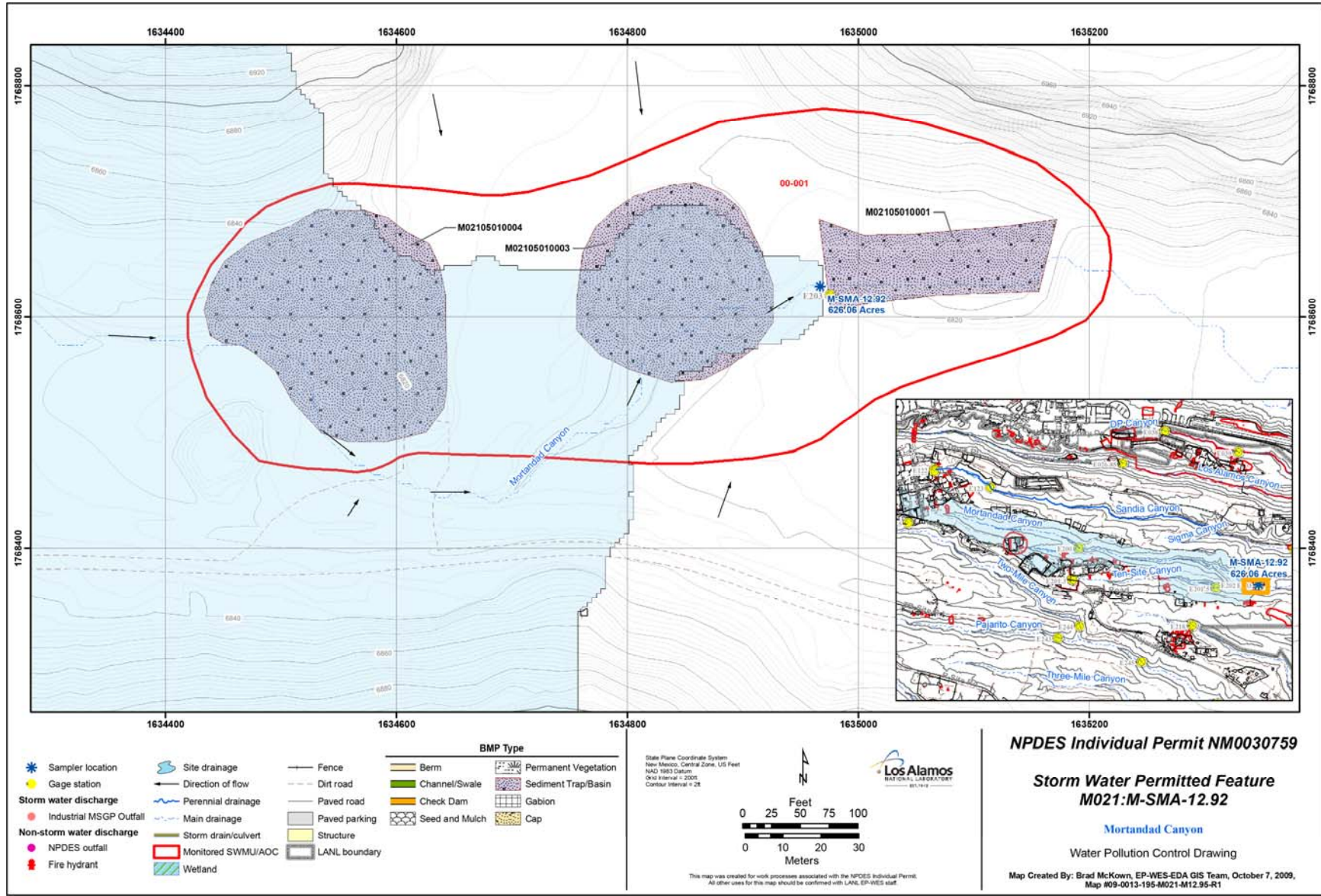


Figure 117-1 M-SMA-12.92 location map

## 118.0 M-SMA-13: AOC 05-001(c)

### 118.1 Site Descriptions

One historical industrial activity area is associated with M022, M-SMA-13: Site 05-001(c).

AOC 05-001(c) is a former firing point designated as the larger Beta Far Point Site, known only by references on maps and memoranda. AOC 05-001(c) reportedly was located several hundred ft east of SWMU 05-001(b) [now part of Consolidated Unit 05-001(a)-99], but its exact location, dates of operation, and types of potential releases are not known, as reported in the 1990 SWMU Report. After unsuccessfully searching libraries, records center, and archives at the Laboratory for information on this site, a retired Los Alamos WX-Division leader who had established the site in 1944 was contacted and interviewed for information on the site. A site visit was also conducted to further clarify the information provided. Beta Far Site Point was established 600 ft to 700 ft south/southeast of Firing Points 1 [05-001(a)] and 2 [05-001(b)]. It was located in Cañada del Buey off the toe of the south mesa, 20 ft to 30 ft below the mesa top. No facilities were established at the site. Multiconductor and coax cabling was run from the existing control bunker located approximately 1400 ft west of the site. Two or three 2500-lb shots were detonated at the site during the lifetime of the operation. Shot debris consisted of cabling, tuballoy, steel, aluminum, and wood. The shot debris radius was estimated to be 100 to 200 yd from the firing point. The site was closed in the spring of 1945. This site was not part of the 1985 LASC D&D activities that were conducted at TA-05.

The project map (Figure 118-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 118.2 Control Measures

Potential run-on may enter this Permitted Feature from an unpaved access road on the northern boundary of the SMA. A natural drainage channel bisects the SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 118-1).

**Table 118-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
M02201010012	Seed and Mulch - Seed and Wood Mulch			X		CB
M02202010002	Established Vegetation - Grasses and Shrubs			X		CB
M02203010013	Berms - Earthen	X			X	B
M02206010008	Check Dam - Rock	X			X	CB
M02206010009	Check Dam - Rock	X			X	CB
M02206010010	Check Dam - Rock	X			X	CB
M02206010011	Check Dam - Rock	X			X	CB
M02206020001	Check Dam - Log		X		X	CB
M02206020003	Check Dam - Log		X		X	CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.



### 118.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at M-SMA-13. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 118.4 Inspections and Maintenance

RG203 recorded four storm events at M-SMA-13 during the 2012 season. These rain events triggered four post-storm inspections. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 118-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-22640	01-18-2012
Storm Rain Event	BMP-22894	05-01-2012
Storm Rain Event	BMP-24992	07-17-2012
Storm Rain Event	BMP-26269	08-08-2012
Storm Rain Event	BMP-28744	10-22-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 118-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-22728	Extended both ends of rock check dam M02206010010 approximately 4 feet.	04-26-2012	99 day(s)	Maintenance conducted as soon as practicable.
BMP-23180	Built up and extended rock check dam M02206010011.	05-16-2012	15 day(s)	Maintenance conducted as soon as practicable.
BMP-23179	Added seed and mulch to M02201010012 between berm and rock check dams.	05-16-2012	15 day(s)	Maintenance conducted as soon as practicable.
BMP-25585	Repaired/modified log check dam M02206020001.	07-31-2012	14 day(s)	Maintenance conducted in timely manner.
BMP-25586	Repaired/modified log check dam M02206020003.	07-31-2012	14 day(s)	Maintenance conducted in timely manner.

### 118.5 Compliance Status

The Site associated with M-SMA-13 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 118-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
AOC 05-001(c)	Baseline Monitoring	Baseline Monitoring Extended	No Comment



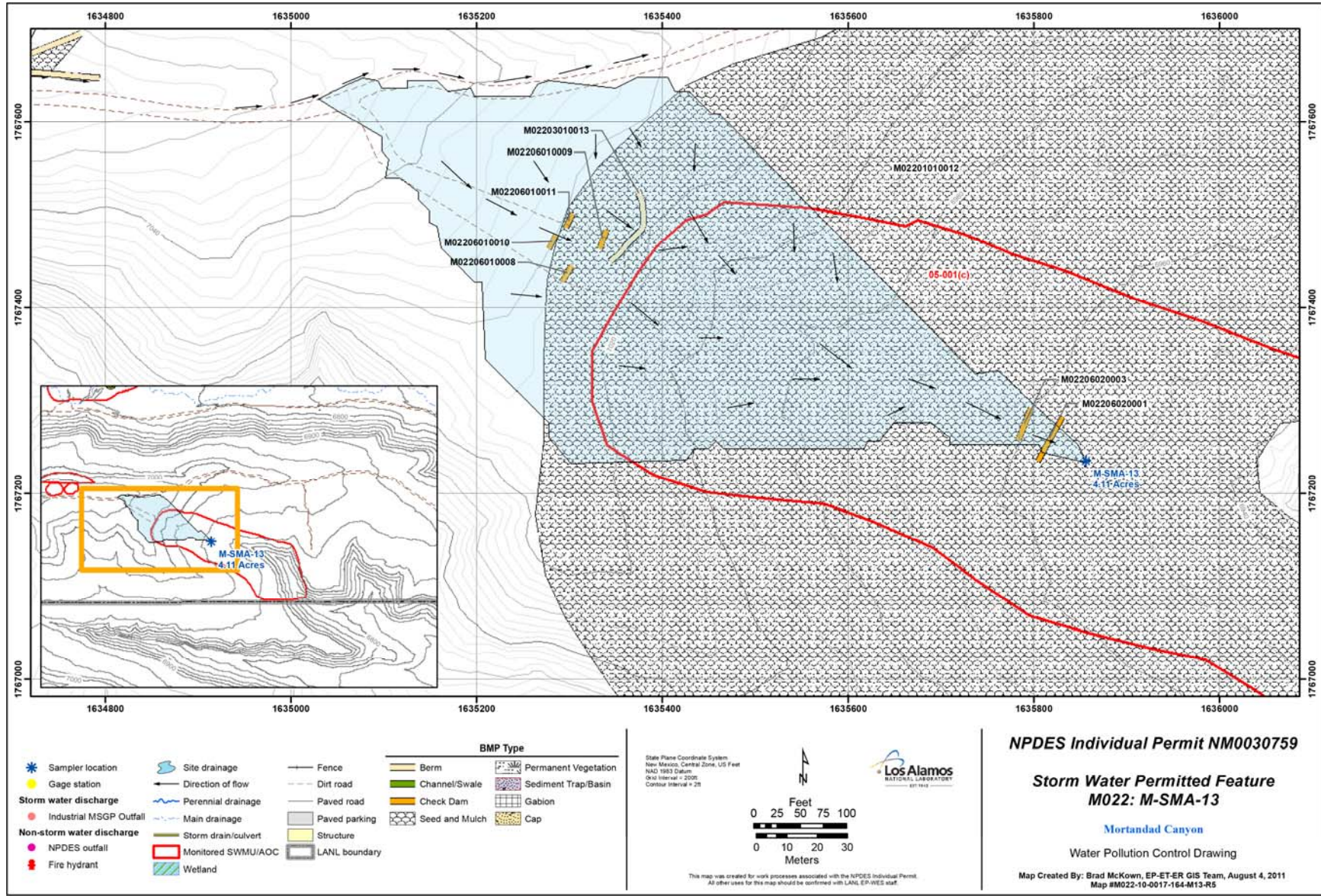


Figure 118-1 M-SMA-13 location map

## **119.0 Pratt-SMA-1.05: SWMUs 35-003(h), 35-003(p), 35-004(h), 35-009(d), 35-016(k), and 35-016(m) and AOCs 35-003(r) and 35-016(l)**

### **119.1 Site Descriptions**

Eight historical industrial activity areas are associated with T001, Pratt-SMA-1.05: Sites 35-003(h), 35-003(p), 35-003(r), 35-004(h), 35-009(d), 35-016(k), 35-016(l), and 35-016(m).

SWMU 35-003(h) is the site of a former concrete retention tank that was added to the TA-35 WWTP in 1961. The retention tank had dimensions of 8 ft × 12 ft × 10 ft deep and was connected to buildings 35-10 and 35-41 by 4-in.-diameter stainless-steel underground pipes. The retention tank and associated piping were removed in February 1985 during the Laboratory's RLWLR project. During decommissioning, no leaks or discharges from the tank were documented. The tank and excavated soil were field-screened for radioactivity during removal; no radioactivity above background levels was detected. SWMU 35-003(h) along with numerous other SWMUs and AOCs is a component of the TA-35 WWTP Consolidated Unit 35-003(a)-99.

SWMU 35-003(p) is the former location of the air-filter building (former building 35-7). Radioactive-contaminated air from work areas in building 35-2 was filtered in building 35-7. The air filters were cleaned with tap water or wastewater from the TA-35 WWTP tank farm [Consolidated Unit 35-003(d)-00], which was contaminated with strontium-89 and strontium-90. Buildup of strontium in the air filters became a problem and required increased filter washings, which produced more radioactive wastewater. The large volumes of waste water overwhelmed the storage capacity of the system leading to spills, overflows, and unplanned releases to Pratt Canyon. The air-filter building was decommissioned in 1980 and removed in 1996. SWMU 35-003(p) along with numerous other SWMUs and AOCs is a component of the TA-35 WWTP Consolidated Unit 35-003(a)-99.

SWMU 35-004(h) consists of a former outdoor SAA located near the northeast corner of the former air filter building (former building 35-7) and next to former waste line manhole 35-11. Waste accumulated in the SAA reportedly included small quantities of oils, solvents, and Freon and capacitors. A 1979 photograph shows what appears to be a small storage container/drum on the asphalt paving next to the northeast corner of former building 35-7. A 1983 photograph shows that the container/drum had been replaced by a small rectangular storage cabinet. The SAA was decommissioned prior to the start of D&D activities in 1985, when the sections of the waste lines adjacent to the east and north side of former building 35-7 were removed. The SWMU 35-004(h) storage area was situated over the former building 35-7 waste lines and manhole 35-1; when these waste lines were removed, the location of the storage area was also removed. In 1996, building 35-7, its foundation, and all remaining inactive buried waste lines were removed to a depth of approximately 15 ft bgs. After these structures were removed, the entire area was backfilled with clean fill and regraded.

SWMU 35-009(d) is an inactive septic system that consists of a 1600-gal. septic tank (structure 35-65), a cleanout manhole (structure 35-64), and an associated leach field. The septic system is located east of the northeast corner of building 35-27. An outfall from the east end of the septic system discharged to the south into a small extension of Ten Site Canyon, designated as Pratt Canyon. The leach field covers an area of approximately 1800 ft<sup>2</sup> and consists of fine- to coarse-grained sandstone and cobble filter bed material. Consolidated tuff is reached at depths of 8 to 10 ft bgs in the leach field. This septic system served the Nuclear Safeguards Research Building (35-27) and other laboratory buildings at TA-35 from 1966 to 1990 when it was taken out of service.



SWMU 35-016(k) is a former NPDES-permitted outfall that received noncontact cooling water from a closed heat-exchange system that served a gas laser in the gas laser building (building 35-29). The outfall was installed in 1961 and deactivated in 1987. The drainline runs eastward from building 35-29 and discharged to a channel, which drained to a small tributary of Ten Site Canyon known as Pratt Canyon [Consolidated Unit 35-003(d)-00]. SWMU 35-016(k) is a component of Consolidated Unit 35-016(k)-00 along with AOC 35-016(l).

SWMU 35-016(m) consists of a 1.5-in.-diameter metal blowdown line and a 4-in.-diameter metal drainline that were intended to serve an inactive noncontact cooling tower outfall established in 1966 and deactivated in 1982. This outfall is located on the east end of the TA-35 mesa top south of a cooling tower, structure 35-33, and east of the Nuclear Safeguards Research Building (35-27). The formerly permitted outfall associated with the cooling tower was intended for discharging treated cooling tower blow-down from two planned reactors in building 35-27. However, the reactors were never installed, the cooling tower was never operated, and the outfall never served its intended purpose. The SWMU 35-016(m) outfall has only discharged storm water runoff from paved parking areas at the east end of the TA-35 mesa top.



PRATT-SMA-1.05, Earthen Berm, T00103010017 (photo ID 7452-11)

AOC 35-003(r) is the location of a former outfall for liquid sludge effluent associated with the 35-10 holding tanks, [SWMU 35-003(d)] and the TA-35 WWTP. This AOC is located in Pratt Canyon and extends from the eastern edge of Ten Site Mesa (the headwall of Pratt Canyon) to the confluence of Pratt and Ten Site Canyons. The former TA-35 WWTP that released the effluent ceased operation in 1963 when the new RLWTF came on line at TA-50. AOC 35-003(r) along with SWMUs 35-003(d, l, and q) is a component of Consolidated Unit 35-003(d)-00. The sites in Consolidated Unit 35-003(d)-00 represent the

Pratt Canyon component of the former TA-35 WWTP [see Consolidated Unit 35-003(a)-99 for descriptions of the remaining components of the WWTP]. The former structures associated with this consolidated unit are collectively referred to as the “Tank Farm.” The former TA-35 WWTP received and processed air and liquid wastes from radiochemistry laboratories and from the operation of radioactive lanthanum-140 hot cells located in building 35-2, where kilocurie sources of lanthanum-140 were prepared during the 1950s. The liquid wastes from the building 35-2 laboratories were acidic and included barium-140, lanthanum 140, strontium-89, strontium-90, and yttrium-90. From 1951 to 1955, the treated wastewater was stored in four concrete tanks (Tank Farm 35-10) for approximately 6 mo to allow the lanthanum-140 to decay. The water was either allowed to evaporate or used to wash air-cleaning filters from the filter building. If the incoming waste volumes were greater than losses through evaporation, the stored water was released to Pratt Canyon, a small side canyon east of the TA-35 WWTP. Because the tank farm 35-10 holding tanks did not have a gravity drainline to the canyon, all contents were pumped through building 35-7 (the air-filter building) for treatment and discharged through a daylight diversion channel. Several reports mention that the 35-10 holding tanks accidentally over-filled and spilled contaminated liquids directly into Pratt Canyon. These occasional spills were probably the only discharges that did not flow through the daylight diversion channel. The TA-35 WWTP operated from 1951 to 1963. All buildings, foundations, and structures associated with Consolidated Unit 35-003(d)-00 were removed during D&D activities in 1981 and 1985. After the 1985 removal, the area was backfilled with clean fill material and indigenous tuff.

AOC 35-016(l) consists of active storm water drainage channels established in 1961 to handle runoff from building 35-29 and sterilized water leaks from an ultraviolet water sterilizer in room 001A of building 35-29. The drainages flow eastward to a 24-in. CMP outfall located on the north side of the security fence for building 35-27, discharging to the same channel as SWMU 35-016(k) into Pratt Canyon. A concrete catch basin located at the head of the drainage channels collects and detains storm water runoff before discharging the drainage channels. Stained tuff from past dielectric oil spills [AOC 35-014(c), Consolidated Unit 35-003(j)-99, and AOC 35-018(a)] are located in the source areas for these drainage channels, including AOC 35-018(a), the former location of a transformer near the southwest corner of building 35-29 that leaked dielectric oil. During a 1988 site visit, former Environmental Restoration Project personnel screened the concrete catch basin for gross radioactivity; gross gamma radiation readings exceeded BVs/FVs. AOC 35-016(l) is a component of Consolidated Unit 35-016(k)-00 along with SWMU 35-016(k).

The project map (Figure 119-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 119.2 Control Measures

Potential contributions to run-on at this SMA originate from the paved areas to the west as well as the roof drains of buildings in the area. Existing controls address these run-on sources. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 119-1).

**Table 119-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
T00102010001	Established Vegetation - Grasses and Shrubs			X		CB
T00102020009	Established Vegetation - Forested/Needle Cast			X		CB
T00103010002	Berms - Earthen		X		X	CB
T00103010017	Berms - Earthen	X			X	CB
T00103020013	Berms - Base Course	X			X	CB
T00103020014	Berms - Base Course	X			X	CB
T00103020015	Berms - Base Course	X			X	CB
T00103020016	Berms - Base Course	X			X	CB
T00103020018	Berms - Base Course	X			X	CB
T00103090004	Berms - Curbing	X			X	CB
T00103120008	Berms - Rock		X		X	CB
T00104020006	Channel/Swale - Concrete/Asphalt	X		X		CB
T00106010011	Check Dam - Rock		X		X	CB
T00106010012	Check Dam - Rock		X		X	CB
T00107010003	Gabions - Gabions		X		X	CB
T00108020005	Cap - Rock	X		X		CB

CB: Certified baseline control measure.  
 B: Additional baseline control measure.  
 EC: Enhanced control measure.

### 119.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at Pratt-SMA-1.05. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 119.4 Inspections and Maintenance

RG200.5 recorded one storm event at Pratt-SMA-1.05 during the 2012 season. These rain events triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 119-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23434	06-07-2012
Storm Rain Event	BMP-28735	10-22-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 119-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-24109	Picked up trash in areas around 35-003(p) and 35-016(m) and near gabion T00107010003.	06-19-2012	12 day(s)	Maintenance conducted in timely manner.
BMP-28735	Collected and disposed of some trash.	10-22-2012	0 day(s)	Maintenance conducted upon inspection.
BMP-29101	Added rock to build up and extend rock check dam T00106010012.	11-05-2012	14 day(s)	Maintenance conducted in timely manner.
BMP-29102	Removed floatable debris and trash from channels.	11-05-2012	14 day(s)	Maintenance conducted in timely manner.

### 119.5 Compliance Status

The Sites associated with Pratt-SMA-1.05 are high priority Sites. Corrective action is to be certified complete within 3 yr of the effective date of the IP (i.e., November 2015).



**Table 119-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 35-003(h)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 35-003(p)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
AOC 35-003(r)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 35-004(h)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 35-009(d)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 35-016(k)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
AOC 35-016(l)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 35-016(m)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

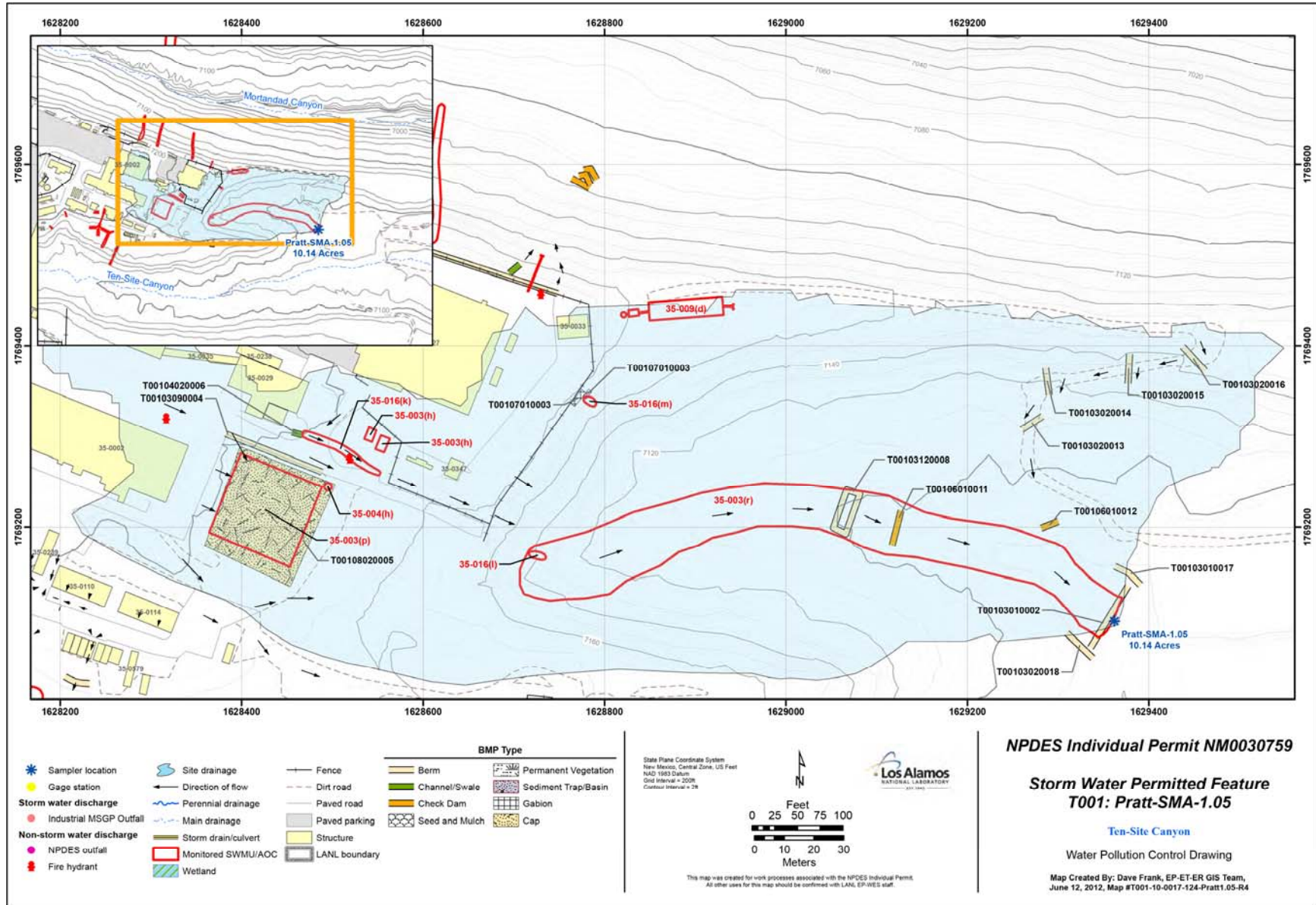


Figure 119-1 Pratt-SMA-1.05 location map

## **120.0 T-SMA-1: SWMUs 50-006(a) and 50-009**

### **120.1 Site Descriptions**

Two historical industrial activity areas are associated with T002, T-SMA-1: Sites 50-006(a) and 50-009.

SWMU 50-006(a) is the outfall area at the head of Ten Site Canyon impacted by two accidental operational releases when a sump in a pumping station (building 50-2) overflowed, causing untreated wastewater to be discharged to waste lines 55 and 67 (the waste lines for treated effluent). The releases occurred in July and September 1974. In February 1975, waste line 67 was plugged at its outfall. A soil sample collected from the outfall area when waste line 67 was plugged showed elevated levels of gross-alpha radioactivity. Analysis of additional soil samples collected below the waste line 67 outfall in September 1976 showed elevated levels of gross-alpha radioactivity extending 984 ft downgradient of the outfall. In 1981, both waste lines 55 and 67 were completely removed. During waste line removal, elevated levels of radionuclides, including plutonium-239, ruthenium-106, cesium-137, strontium-89, and yttrium-90, were detected. As a result, the outfall area was partially remediated by the removal of 70 m<sup>3</sup> of contaminated soil from the outfall location. Potential contaminants associated with industrial materials historically managed at this Site are radionuclides.

SWMU 50-009 is an inactive 11.8-acre landfill consisting of 7 subsurface disposal pits and 108 shafts known as MDA C located at TA-50. Solid waste containing hazardous constituents as well as radioactive waste was disposed of in the landfill between 1948 and 1974. The depths of the 7 pits at MDA C range from 12 ft to 25 ft below the original ground surface, and the depths of the 108 shafts range from 10 ft to 25 ft below the original ground surface. The original ground surface is defined as the surface beneath the cover that was placed over the site in 1984. The pits and shafts are constructed in the Tshirege Member of the Bandelier Tuff. The topography of MDA C is relatively flat, although the slope descends to the north where the northeast corner of MDA C abuts the south wall of Ten Site Canyon. The pits were subsequently covered with varying amounts of crushed tuff and fill material. The shafts were sealed by filling them with crushed tuff, followed by concrete. The surface of the site is covered with native grasses. Since wastes disposed at MDA C and potential releases are in the subsurface, industrial materials historically managed at MDA C are not exposed to storm water and, therefore, could not result in contaminant discharges to receiving waters.

The project map (Figure 120-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### **120.2 Control Measures**

The potential for run-on from surrounding roads is minimal. However, there is potential run-on from the paved areas below, especially the northeast portion of the SMA. A corrective action plan has been developed for this monitored area. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 120-1).

**Table 120-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
T00202010004	Established Vegetation - Grasses and Shrubs			X		CB
T00203060007	Berms - Straw Wattles		X		X	B
T00203060008	Berms - Straw Wattles		X		X	B
T00203060009	Berms - Straw Wattles		X		X	B
T00203060010	Berms - Straw Wattles		X		X	B
T00203060011	Berms - Straw Wattles		X		X	B
T00203060012	Berms - Straw Wattles		X		X	B
T00204060006	Channel/Swale - Riprap		X	X		CB
T00208010001	Cap - Earth	X		X		CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

Enhanced control measures will be installed in the second quarter of 2013 as part of corrective action.

### 120.3 Storm Water Monitoring

SWMUs 50-006(a) and 50-009 are monitored within T-SMA-1. Following the installation of baseline control measures, a baseline storm water sample was collected on July 30, 2011, and August 15, 2011 (Figures 120-2 and 120-3). Analytical results from this sample yielded three TAL exceedances:

- Copper concentration of 12.6 and 21.2 µg/L (MTAL is 4.3 µg/L),
- Zinc concentration of 103 and 324 µg/L (MTAL is 42 µg/L), and
- PCB concentration of 10 and 60 ng/L (ATAL is 0.6 ng/L).

These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

*SWMU 50-006(a)*: Potential contaminants associated with industrial materials historically managed at this Site are radionuclides.

- Copper—Copper was not detected above BV in soil samples collected during the 2009 Consent Order investigation.
- Zinc—Zinc was detected at a maximum concentration 1.4 times BV in soil samples collected during the 2009 Consent Order investigation.
- PCBs—PCBs were detected at a maximum concentration 62% of the residential SSL in soil samples collected during the 2009 Consent Order investigation and 1993 RFI.

In summary, copper, zinc, and PCBs are not known to be associated with industrial materials historically managed at the Site. Copper was not above BV and zinc was only slightly above BV. PCBs were detected at concentrations just below residential SSLs. Based on site history and previous sampling results, the

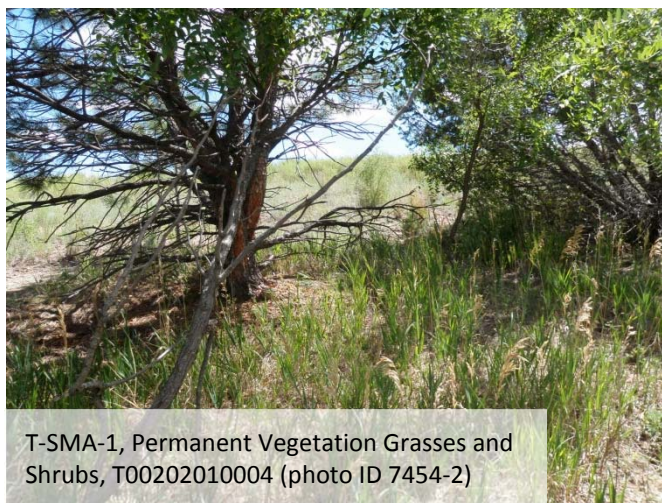


Site is an unlikely source of copper and zinc above MTALs but may be a source of PCBs above ATAL in storm water.

*SWMU 50-009:* Since wastes disposed at MDA C and potential releases are in the subsurface, industrial materials historically managed at MDA C are not exposed to storm water and, therefore, could not result in contaminant discharges to receiving waters.

- Copper—Copper was not detected above BV in surface and near surface samples collected during the 2008 Phase II Consent Order investigation.
- Zinc—Zinc was detected at a maximum concentration 1.7 times BV in surface and near surface soil samples collected during the 2008 Phase II Consent Order investigation.
- PCBs—Phase II Consent Order samples were not analyzed for PCBs because potential PCB contamination had previously been characterized during a 1993 RFI. PCBs were detected infrequently in 1993 RFI surface samples (i.e., in fewer than 10% of the samples) with a maximum concentration 89% of the residential SSL.

In summary, copper, zinc, and PCBs are known to be associated with industrial materials historically managed at the Site. These materials, however, consist of wastes that were disposed of in subsurface pits that were subsequently covered. Therefore, these materials are not exposed to storm water. Copper was not above BV and zinc was only slightly above BV. PCBs were detected at concentrations just below residential SSLs. Based on site history and previous sampling results, the Site is an unlikely source of copper and zinc above MTALs but may be a source of PCBs above ATAL in storm water.



T-SMA-1, Permanent Vegetation Grasses and Shrubs, T00202010004 (photo ID 7454-2)

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figures 120-2 and 120-3. UTLs developed for urban settings were derived from runoff from developed landscapes on the Pajarito Plateau, including buildings, parking lots, roads, and associated features, and are labeled “Developed Background” in Figures 120-2 and 120-3.

Monitoring location T-SMA-1 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as from landscape consisting of Bandelier Tuff sediment. Metals including copper and zinc are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff. PCBs are associated with building materials including paint, caulking, asphalt, solvents, transformers, and cutting oils.

- Copper—The copper UTL from developed urban landscape storm water run-on is 32.3 µg/L; the copper UTL for storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L. The copper results from 2011 are both between these two values.



- Zinc—The zinc UTL from developed urban landscape storm water run-on is 1120 µg/L; the zinc UTL for storm water containing sediments derived from Bandelier Tuff is 109 µg/L. One of the zinc results from 2011 is less than both of these values, and the other result is between them.
- PCB—The PCB UTL from developed urban landscape storm water run-on is 98 ng/L; the PCB UTL for storm water containing sediments derived from Bandelier Tuff is 11.7 ng/L. One of the PCB results from 2011 is less than both of these values, and the other result is between them.

All the analytical results for these samples are reported in the 2011 Annual Report.

#### 120.4 Inspections and Maintenance

RG200.5 recorded one storm event at T-SMA-1 during the 2012 season. These rain events triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 120-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Visual	COMP-20994	03-27-2012
Annual Erosion Evaluation	COMP-22641	03-27-2012
Storm Rain Event	BMP-28726	10-25-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 120-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-29287	Replaced 5 wattles consisting of T00203060003, which was retired, with new wattles T00203060007-0011 and also added new wattle T00203060012 to northern end.	11-01-2012	7 day(s)	Maintenance conducted in timely manner.

#### 120.5 Compliance Status

The Sites associated with T-SMA-1 are high priority Sites. Corrective action is to be certified complete within 3 yr of the effective date of the IP (i.e., November 2015).

**Table 120-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 50-006(a)	Corrective Action Initiated	Corrective Action Initiated	Initiated 10-21-2011
SWMU 50-009	Corrective Action Initiated	Corrective Action Initiated	Initiated 10-21-2011

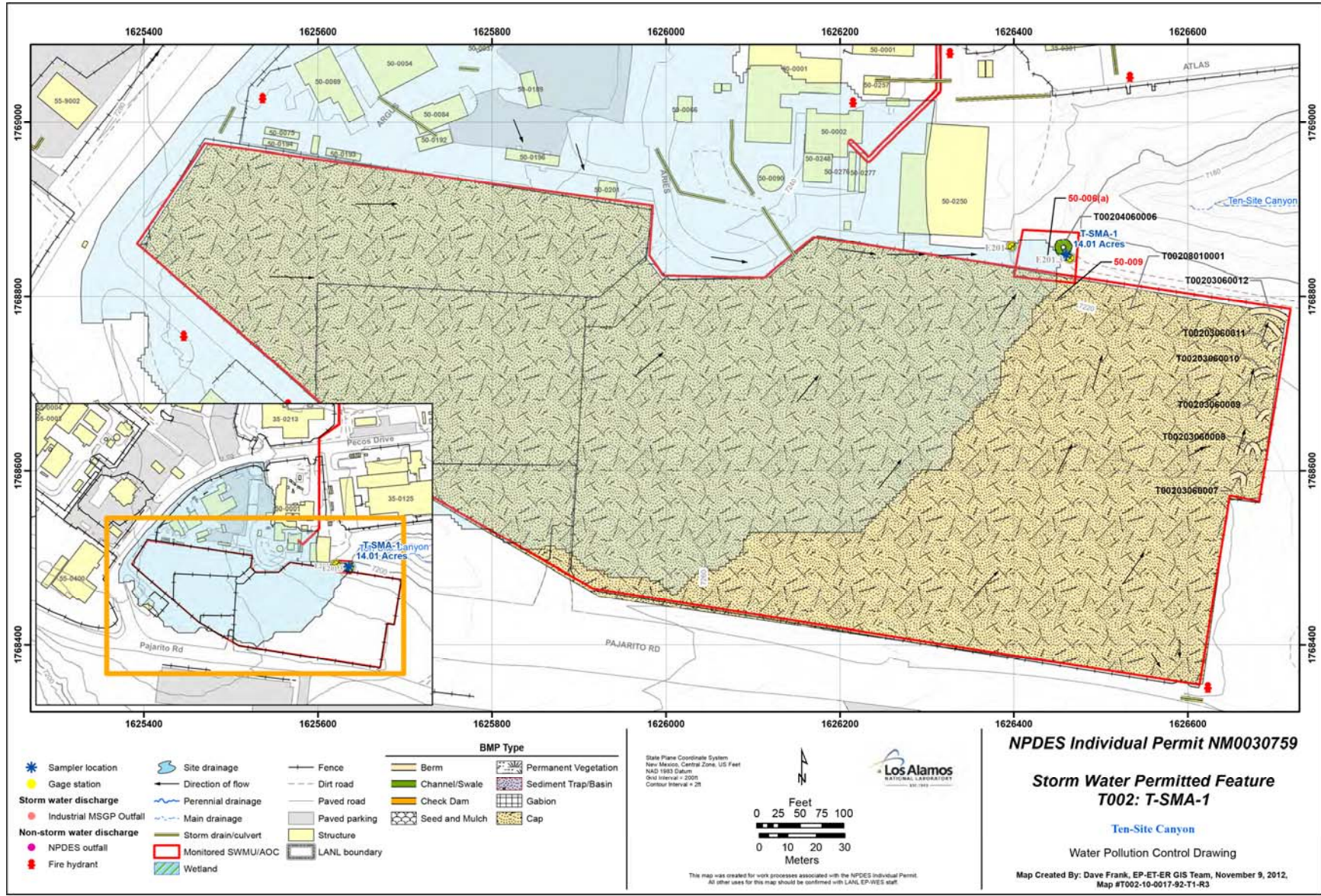
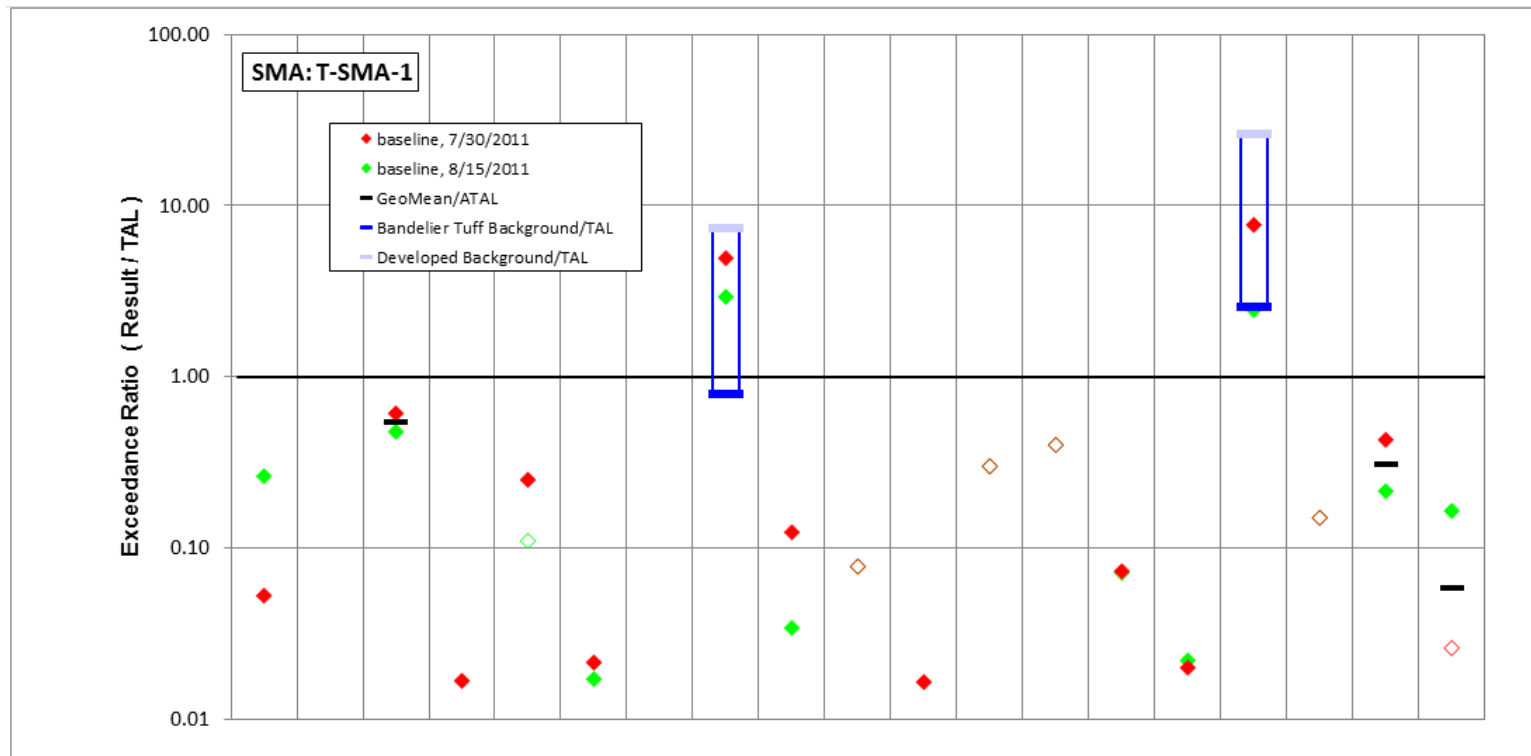


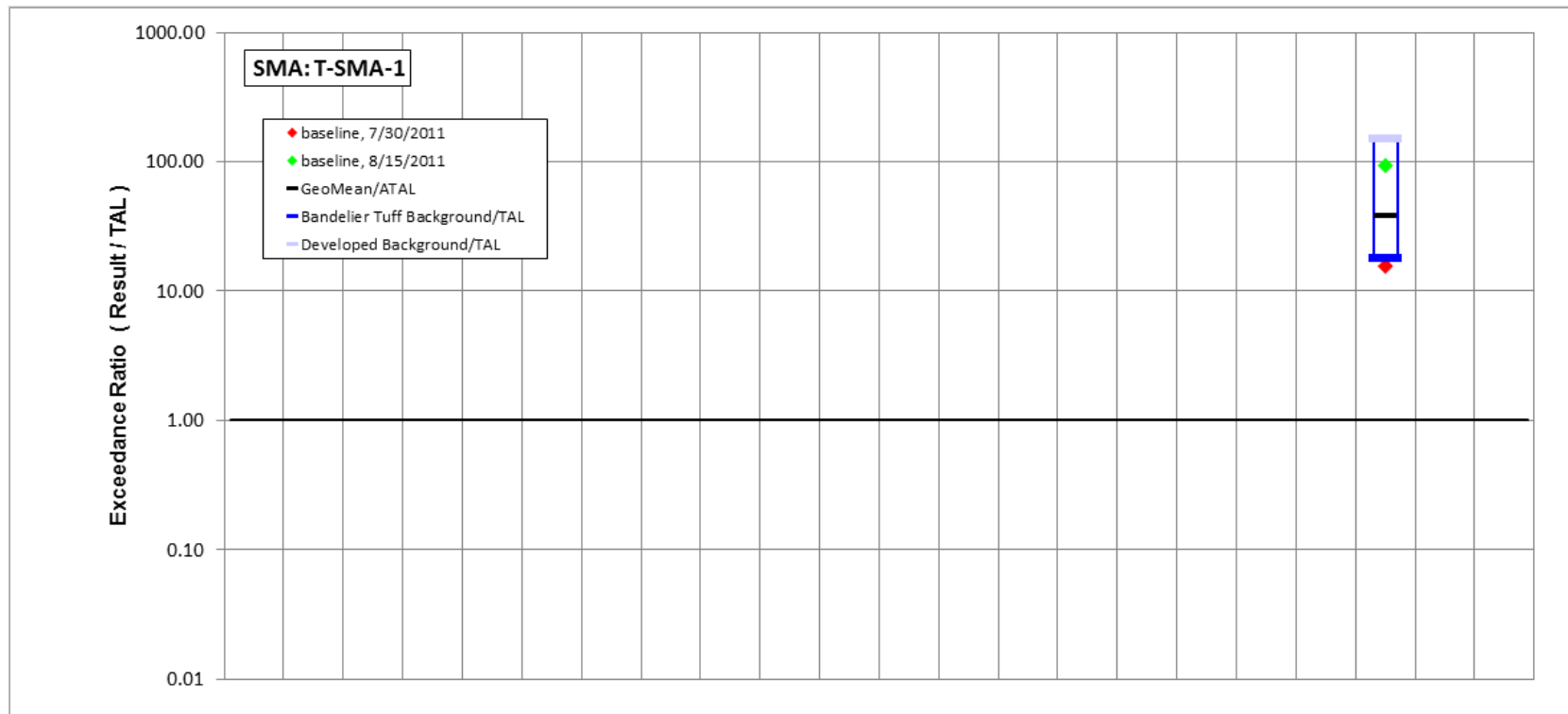
Figure 120-1 T-SMA-1 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	<b>Copper</b>	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	<b>Zinc</b>	Cyanide, weak acid dissociable	Gross alpha	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
<b>8/15/2011 result</b>	197	<i>1</i>	4.3	27	0.11	3.6	<i>1</i>	<b>12.6</b>	0.58	<i>0.06</i>	1.4	1.5	0.2	0.45	2.2	<b>103</b>	0.002	3.22	4.94
result / TAL	0.26	<i>0.002</i>	0.48	0.0054	0.11	0.017	<i>0.001</i>	<b>2.9</b>	0.034	<i>0.078</i>	0.0082	0.3	0.4	0.071	0.022	<b>2.5</b>	0.15	0.21	0.16
<b>7/30/2011 result</b>	39.5	1.1	5.5	83.7	0.25	4.5	2.5	<b>21.2</b>	2.1	<i>0.06</i>	2.8	1.5	0.2	0.46	2	<b>324</b>	0.002	6.42	0.78
result / TAL	0.053	0.0017	0.61	0.017	0.25	0.021	0.0025	<b>4.9</b>	0.12	<i>0.078</i>	0.016	0.3	0.4	0.073	0.02	<b>7.7</b>	0.15	0.43	0.026

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 120-2 Inorganic analytical results summary plot for T-SMA-1



	Aldrin	Benzo(a)pyrene	BHC[gamma-]	Chlordane (alpha/gamma)	Chlordane[alpha-]	Chlordane[gamma-]	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Pentachlorophenol	RDX	Tetrachlorodibenzo dioxin[2,3,7,8-]	<b>Total PCB</b>	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6-]
std used in ratio calculations	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ATAL	-	-
std value	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6E-04	-	-
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
<b>8/15/2011 result</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>0.06</b>	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>94</b>	-	-
<b>7/30/2011 result</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>0.01</b>	-	-
result / TAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>16</b>	-	-

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 120-3 Organic analytical results summary plot for T-SMA-1



## 121.0 T-SMA-2.5: AOC 35-014(g3)

### 121.1 Site Descriptions

One historical industrial activity area is associated with T003, T-SMA-2.5: Site 35-014(g3).

AOC 35-014(g3) is an oil-stained area resulting from an oil spill that occurred in 1984 near the former Tank Farm [SWMU 35-015(a)] on the west side of the CO<sub>2</sub>-laser building, 35-86. The source of the spill was an oil tanker truck; however, the quantity of oil released is not documented. The spill flowed southward through a culvert under the road on the south side of building 35-86, across the parking lot west of building 35-207, and south through a natural drainage channel [AOC 35-016(n)] into Ten Site Canyon. Staining from the spill is clearly visible in a 1986 aerial photograph. The stained area was observed during an August 1991 site visit. At that time, vegetation in the path of the spill was dead and a strong petroleum hydrocarbon odor was evident.

The project map (Figure 121-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 121.2 Control Measures

The earthen channel above the ground cap diverts parking, culvert, and roof run-on to the east away from the SWMU. Road run-on from the north of the SWMU is captured by the cement channel west of the paved access road and is diverted to the west of the SWMU. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 121-1).

**Table 121-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
T00304010002	Channel/Swale - Earthen	X		X		CB
T00306010003	Check Dam - Rock		X		X	CB
T00306010004	Check Dam - Rock		X		X	CB
T00306010005	Check Dam - Rock		X		X	CB
T00308020001	Cap - Rock		X	X		CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 121.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at T-SMA-2.5. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.



### 121.4 Inspections and Maintenance

RG200.5 recorded one storm event at T-SMA-2.5 during the 2012 season. These rain events triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 121-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23465	05-30-2012
Storm Rain Event	BMP-28727	10-23-2012

There were no maintenance activities conducted at T-SMA-2.5 in 2012.

### 121.5 Compliance Status

The Site associated with T-SMA-2.5 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 121-3 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
AOC 35-014(g3)	Baseline Monitoring	Baseline Monitoring Extended	No Comment



T-SMA-2.5, Earthen Channel/Swale, T00304010002 (photo ID 7470-3)

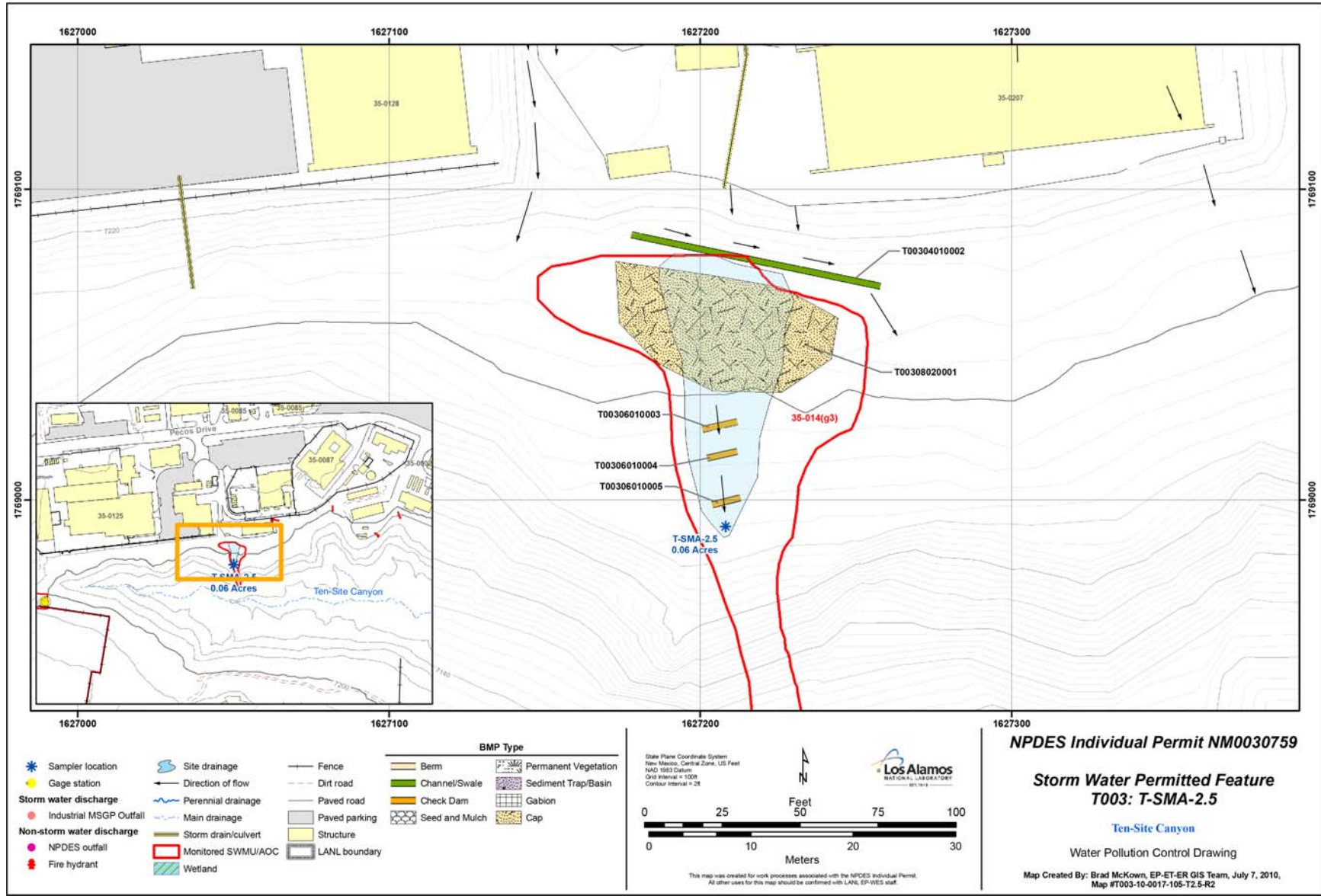


Figure 121-1 T-SMA-2.5 location map



## 122.0 T-SMA-2.85: SWMU 35-014(g) and AOC 35-016(n)

### 122.1 Site Descriptions

Two historical industrial activity areas are associated with T004, T-SMA-2.85: Sites 35-014(g), and 35-016(n).

SWMU 35-014(g) consists of an area of stained concrete next to an asphalt-paved catchment basin located at the northeast corner of an experimental support laboratory (building 35-207). The concrete is stained as a result of a dielectric oil spill. The origin and date of the spill are unknown. The spill was reportedly cleaned up in the late 1980s during the D&D of the former tank farm and waste-oil treatment facility. A catchment basin directs storm water flow to a CMP outfall and daylight drainage channel [AOC 35-016(n)]. A small oil stain remains visible on the concrete. However, no obvious oil staining is apparent in the catchment basin or the outfall. SWMU 35-014(g) along with AOCs 35-004(m), 35-014(g2), and 35-016(n) is a component of Consolidated Unit 35-014(g)-00.

AOC 35-016(n) is an outfall that receives storm water runoff from the roof of the CO<sub>2</sub>-laser building, a paved area south of the laser building (building 35-86), and a grassy slope next to an experimental support laboratory (building 35-207). The outfall consists of a 10-in.-diameter CMP that receives storm water runoff from a daylight drainage channel and asphalt-paved catchment basin. The outfall receives flow from the catchment basin through an intake grate. Recycled separated water from the decommissioned Tank Farm and waste-oil treatment facility [SWMU 35-015(a)], formerly located west of building 35-86, was also discharged into Ten Site Canyon through a storm sewer that leads to AOC 35-016(n). AOC 35-016(n) along with AOCs 35-004(m) and 35-014(g2) and SWMU 35-014(g) is a component of Consolidated Unit 35-014(g)-00.

The project map (Figure 122-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 122.2 Control Measures

The primary source of potential run-on at this SMA is the roof drainage to the channel north of building 36-0207. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 122-1).

**Table 122-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
T00402010003	Established Vegetation - Grasses and Shrubs			X		CB
T00402020002	Established Vegetation - Forested/Needle Cast			X		CB
T00403090004	Berms - Curbing	X			X	CB
T00406010005	Check Dam - Rock		X		X	CB
T00406010006	Check Dam - Rock	X		X		CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 122.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at T-SMA-2.85. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 122.4 Inspections and Maintenance

RG200.5 recorded one storm event at T-SMA-2.85 during the 2012 season. These rain events triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 122-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23466	05-30-2012
Storm Rain Event	BMP-28734	10-23-2012

There were no maintenance activities conducted at T-SMA-2.85 in 2012.

### 122.5 Compliance Status

The Sites associated with T-SMA-2.85 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 122-3 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 35-014(g)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
AOC 35-016(n)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

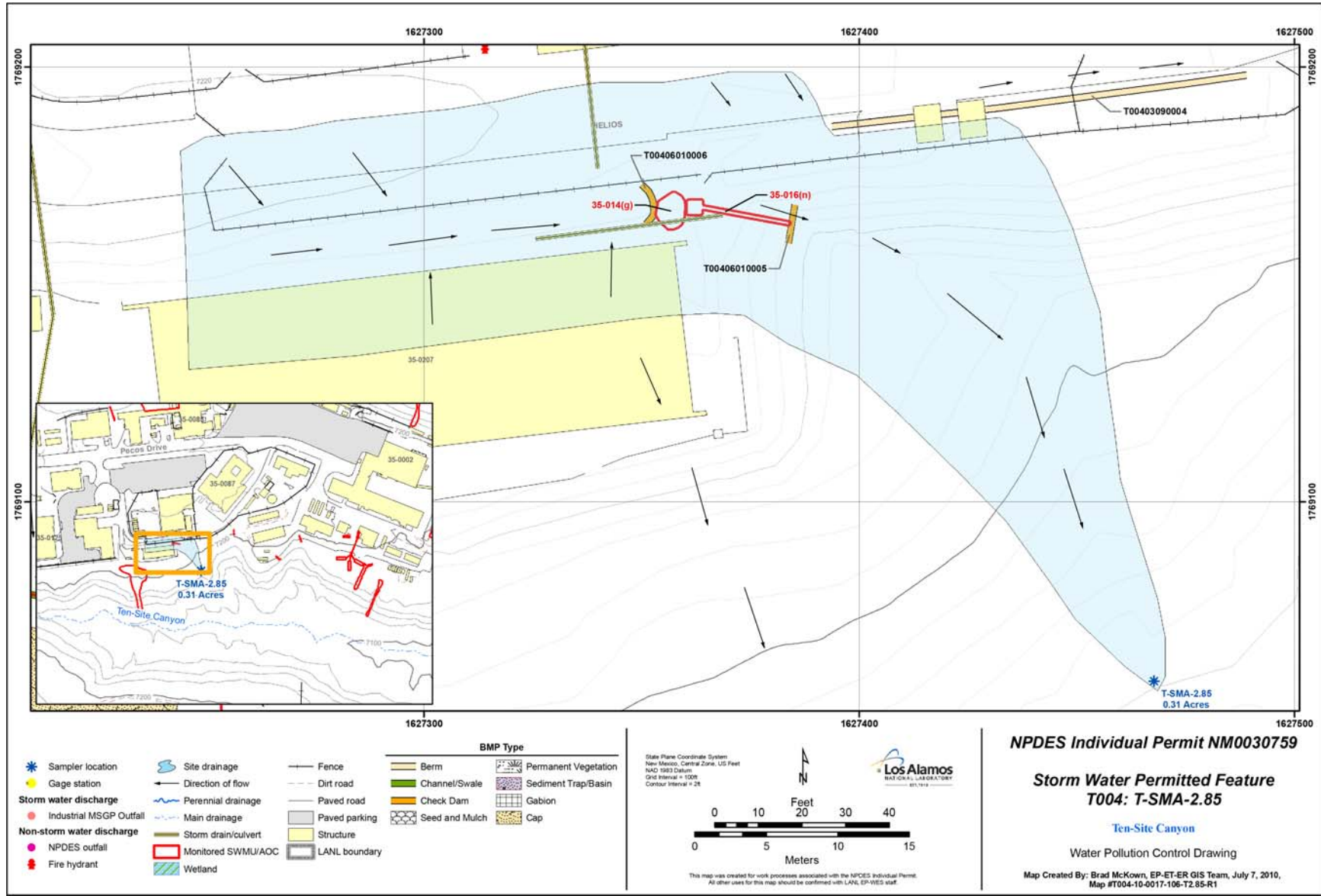


Figure 122-1 T-SMA-2.85 location map



## 123.0 T-SMA-3: AOC 35-016(b)

### 123.1 Site Descriptions

One historical industrial activity area is associated with T005, T-SMA-3: Site 35-016(b).

AOC 35-016(b) is an outfall in Ten Site Canyon that formerly served floor and sink drains in building 35-87 along with building roof drains. Building 35-87 housed a photo laboratory and offices, which discharges storm water from the roof drains of a photo laboratory and office building (35-87). Previously, the effluent discharge volume, limited to 3,000 gal./d, was released to Ten Site Canyon. Photographic fluids were historically processed through a silver and cyanide recovery process and released through this outfall. The six photographic laboratory waste drains (three floor, three sink) routed to this outfall were either plugged (floor) or rerouted (sink) to the sanitary sewer system by 1992. Based on human health and ecological risk-screening assessments, no additional investigation or remediation activities are required at AOC 35-016(b); a COC without controls was requested from NMED in February 2011. Potential contaminants associated with industrial materials historically managed at this Site are metals, specifically silver, and cyanide.

The project map (Figure 123-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 123.2 Control Measures

The potential for run-on at this SMA is impacted by a culvert that captures storm water from the paved area west of building 35-0087 and roof drain run-on that is captured by the culvert west of building 35-0067. These are significant run-on sources for this monitored area. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 123-1).

**Table 123-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
T00502010005	Established Vegetation - Grasses and Shrubs			X		CB
T00502020006	Established Vegetation - Forested/Needle Cast			X		CB
T00504060001	Channel/Swale - Riprap	X		X		CB
T00506020009	Check Dam - Log		X		X	B
T00506020010	Check Dam - Log		X		X	B
T00506020011	Check Dam - Log		X		X	B

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

Enhanced control measures will be installed in the second quarter of 2013 as part of corrective action.

### 123.3 Storm Water Monitoring

AOC 35-016(b) is monitored within T-SMA-3. Following the installation of baseline control measures, a baseline storm water sample was collected on September 9, 2012 (Figure 123-2). Analytical results from this sample yielded two TAL exceedances:

- Copper concentration of 13.4 µg/L (MTAL is 4.3 µg/L), and
- Gross-alpha activity of 34.4 pCi/L (ATAL is 15 pCi/L).

These exceedances were evaluated by comparing the results from soil samples collected at the Sites during Consent Order investigations with the storm water TAL exceedances to determine whether the exceedance may be related to historical industrial activities. The discussion is organized by Site and analyte.

*AOC 35-016(b)*: Potential contaminants associated with industrial materials historically managed at this Site are metals, specifically silver, and cyanide.

- Copper—Copper was detected at a maximum concentration 1.2 times BV in soil samples collected during the 2004–2005 Consent Order investigation.
- Gross alpha—Alpha-emitting radionuclides plutonium-238, uranium-234, uranium-235, and uranium-238 were detected at maximum activities of 1.3 times, 1.1 times, 1.1 times, and 1.3 times BVs/FVs, respectively, in 2004–2005 Consent Order samples and 1997 RFI samples.

In summary, copper and alpha-emitting radionuclides are not known to be associated with industrial materials historically managed at the Site. Copper was detected only slightly above BV and alpha-emitting radionuclides plutonium-238, uranium-234, uranium-235, and uranium-238 were detected only slightly above BVs/FVs. In addition, plutonium and uranium isotopes are excluded from the definition of adjusted gross-alpha radioactivity. Based on site history and previous sampling results, the Site is an unlikely source of copper above MTAL and adjusted gross alpha above ATAL in storm water.

TAL exceedances were also evaluated against the appropriate storm water BVs, that is, “Bandelier Tuff background” for undisturbed SMAs or “developed background” for urban settings. BVs are expressed as UTLs using the approved EPA method for calculating BVs. UTLs for undisturbed SMAs were derived from storm water runoff containing entrained sediments derived from Bandelier Tuff and are labeled “Bandelier Tuff Background” in Figure 123-2. UTLs developed for urban settings were derived from runoff from developed landscapes on the Pajarito Plateau, including buildings, parking lots, roads, and associated features, and are labeled “Developed Background” in Figure 123-2.

Monitoring location T-SMA-3 receives storm water run-on from developed environments, including paved parking lots, roads, and buildings, as well as from landscape consisting of Bandelier Tuff sediment. Metals including copper are associated with building materials, parking lots, and automobiles as well as low concentrations in the Bandelier Tuff. Gross alpha in Bandelier Tuff is associated with naturally occurring radioactive uranium- and thorium-bearing minerals.

- Copper—The copper UTL from developed urban landscape storm water run-on is 32.3 µg/L; the copper UTL for storm water containing sediments derived from Bandelier Tuff is 3.43 µg/L. The copper result from 2012 is between these two values.
- Gross alpha—The gross-alpha UTL from developed urban landscape storm water run-on is 32.5 pCi/L; the gross-alpha UTL for storm water containing sediments derived from Bandelier Tuff is 1490 pCi/L. The 2012 gross-alpha result is between these two values.

All the analytical results for these samples are reported in the 2012 Annual Report.

### 123.4 Inspections and Maintenance

RG200.5 recorded one storm event at T-SMA-3 during the 2012 season. These rain events triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 123-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23467	05-30-2012
Storm Rain Event	BMP-28728	10-23-2012
Visual	COMP-29206	10-25-2012

Maintenance activities conducted at the SMA are summarized in the following table.

**Table 123-3 Maintenance during 2012**

Maintenance Reference	Maintenance Conducted	Maintenance Date	Response Time	Response Discussion
BMP-23210	Installed log check dam T00506020009 in the same location as dam -0007, which was retired.	05-23-2012	219 day(s)	Maintenance conducted as soon as practicable.
BMP-23211	Installed log check dam T00506020010 in the same location as dam -0008, which was retired.	05-23-2012	219 day(s)	Maintenance conducted as soon as practicable.

### 123.5 Compliance Status

The Site associated with T-SMA-3 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 123-4 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
AOC 35-016(b)	Baseline Monitoring	Corrective Action Initiated	Initiated 10-19-2012

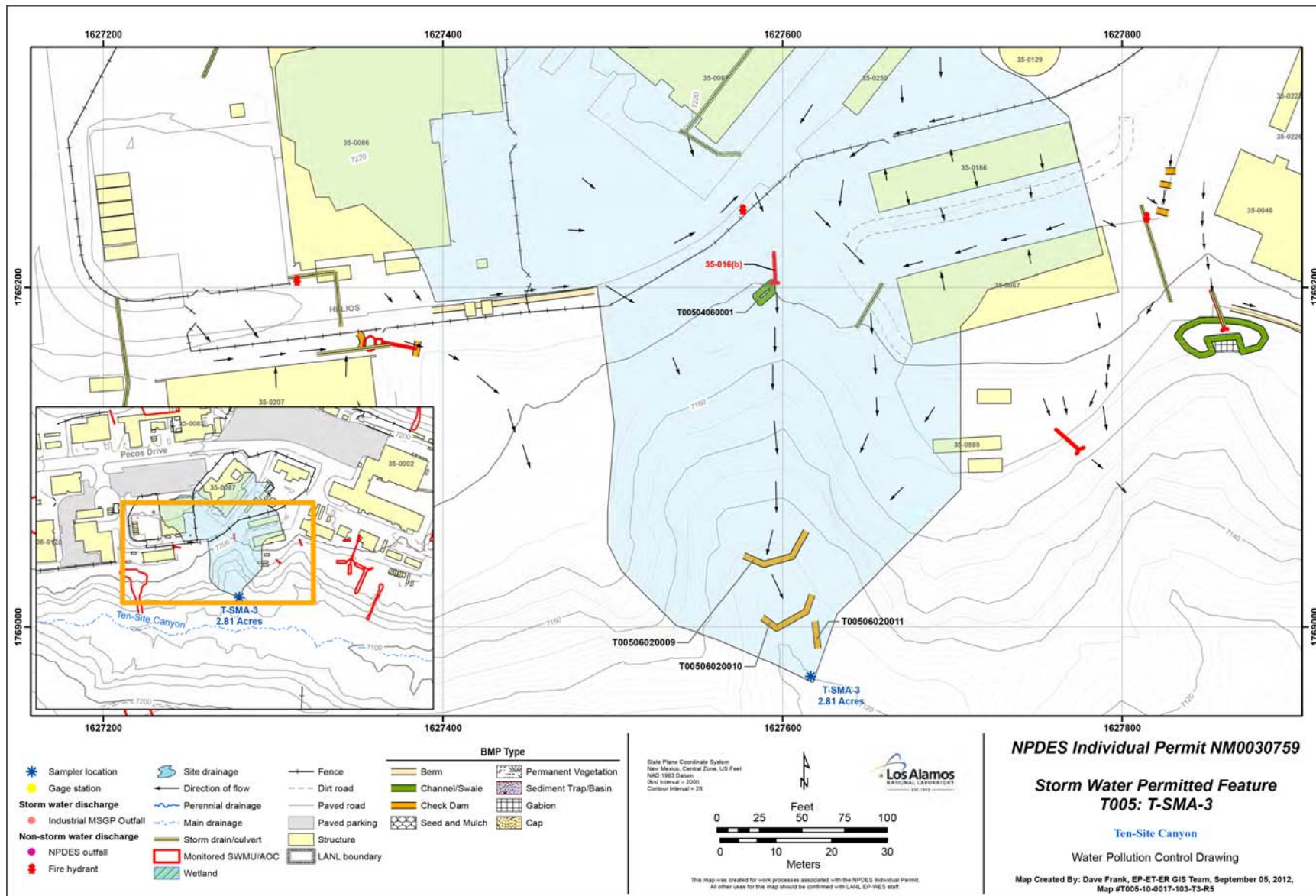
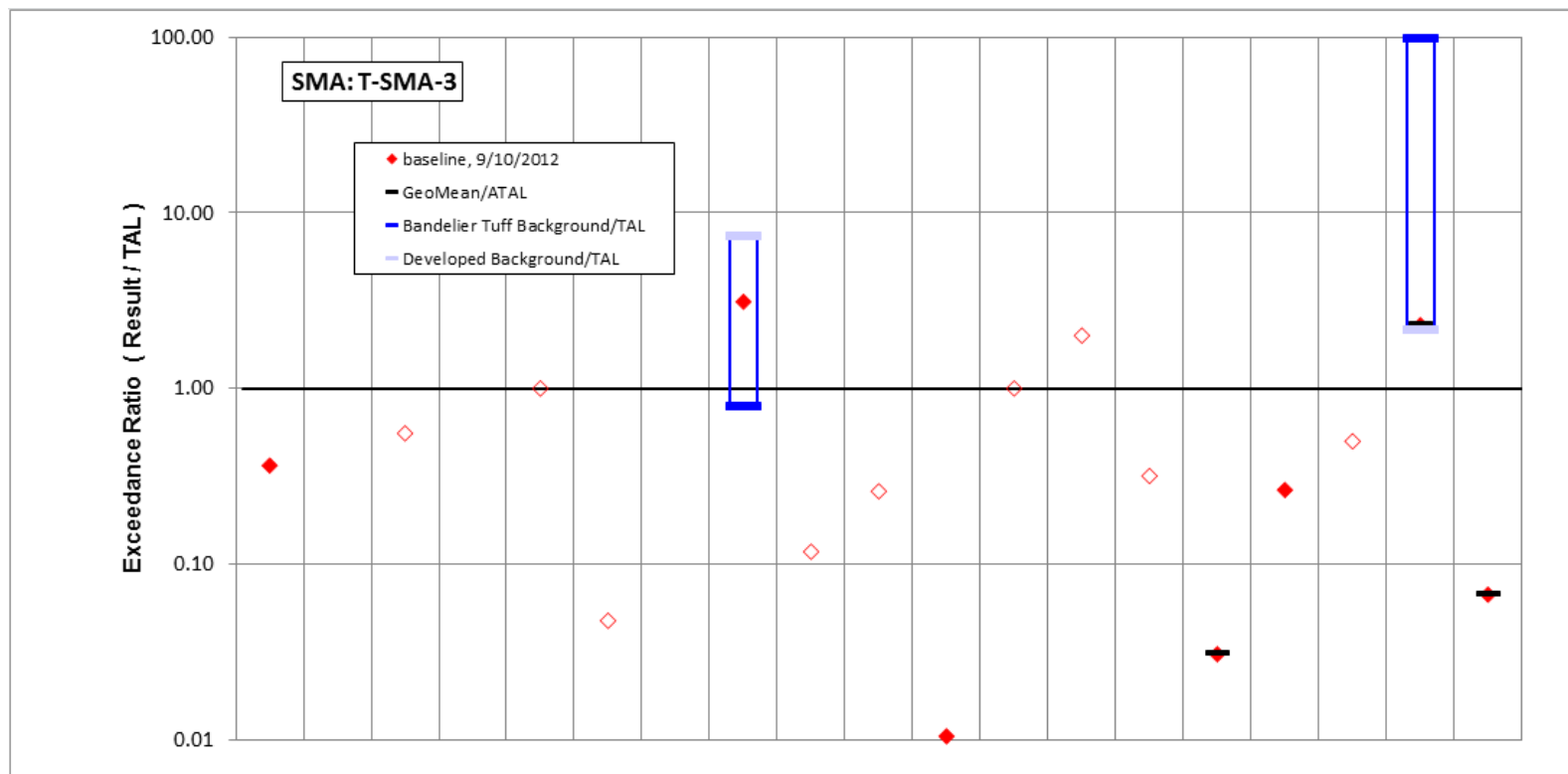


Figure 123-1 T-SMA-3 location map



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	<b>Copper</b>	Lead	Mercury	Nickel	Selenium	<b>Silver</b>	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	<b>Gross alpha</b>	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L
<b>9/10/2012 result</b>	273	3.09	5	20.9	1	10	2.33	<b>13.4</b>	2	0.2	1.78	5	<b>1</b>	2	3.07	11.1	0.005	<b>34.4</b>	2.01
result / TAL	0.36	0.0048	0.56	0.0042	1	0.048	0.0023	<b>3.1</b>	0.12	0.26	0.01	1	<b>2</b>	0.32	0.031	0.26	0.5	<b>2.3</b>	0.067

Bold font indicates result>TAL; italic font indicates undetected results; "-" is used if no analytical results were available.

Figure 123-2 Inorganic analytical results summary plot for T-SMA-3



## 124.0 T-SMA-4: SWMUs 35-004(a), 35-009(a), 35-016(c), and 35-016(d)

### 124.1 Site Descriptions

Four historical industrial activity areas are associated with T006, T-SMA-4: Sites 35-004(a), 35-009(a), 35-016(c), and 35-016(d).

SWMU 35-004(a) consists of a former outdoor SAA located on asphalt next to the southeast corner of building 35-25. Waste accumulated in the SAA reportedly included small quantities of waste oils and solvents. Staining was observed at the site during a 1988 reconnaissance and during a 1990 site inspection. A temporary metal flammable storage structure, 35-386, was placed at the site in 1990 and used as the SAA. According to the Laboratory's RCRA database, the SWMU 35-004(a) SAA was taken out of service in April 1997; however, structure 35-0386 remains at the site for hazardous materials storage.

SWMU 35-009(a) is an inactive septic system that served building 35-2 from 1951 to 1975. The septic system is located near the southwest corner of building 35-4 and consists of a septic tank (structure 35-14), dosing chamber (structure 35-15), a distribution box (structure 35-16), clean out, associated drainline, and a leach field located on the south-facing slope of Ten Site Canyon. The septic tank is approximately 4 ft bgs measuring 10 ft long × 4 ft wide × 5 ft deep with a capacity of 1500 gal. The location of the drainline is not known. The septic system received sanitary wastes from building 35-2. Historical operations at building 35-2 involved the use of lanthanum-140. In addition, two nuclear reactors were as well as plutonium laboratories and lithium titride operations housed in building 35-2. A 1968 memorandum indicates the leach field was plugged and the system was daylighted. In 1975, the remainder of the septic system was taken out of service but was left in place. Portions of the leach field were excavated when the new sanitary sewer lines were routed to the sewage lagoons [Consolidated Unit 35-010(a)-99] located east of TA-35 in Ten Site Canyon.



T-SMA-4, Rock Check Dam, T00606010006 (photo ID 7458-7)

SWMU 35-016(c) consists of two former NPDES-permitted outfalls, established in 1964 to discharge noncontact cooling water from building 35-67. The drainline to one outfall ran about 75 ft southward to the outfall that discharged into Ten Site Canyon. The other outfall, deactivated in 1987, ran about 125 ft from building 35-67 to the outfall that discharged into Ten Site Canyon. The two outfalls were combined by 1985 and were removed from the NPDES permit by 1990. SWMU 35-016(c) along with SWMU 35-016(d) is a component of Consolidated Unit 35-016(c)-00.

SWMU 35-016(d) is a former NPDES-permitted outfall that was constructed in 1962 to handle noncontact cooling water from the reactor components development building (building 35-46). By 1990 this outfall had been removed from the NPDES permit. The drainline runs about 50 ft southward to the outfall that discharged into Ten Site Canyon. SWMU 35-016(d) along with SWMU 35-016(c) is a component of Consolidated Unit 35-016(c)-00.

The project map (Figure 124-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

The Site boundary for SWMU 35-016(d) has been modified to match the boundary depicted in the administrative record for the Consent Order, which is the controlling authority for SWMU and AOC boundary definitions used in the IP. The Site boundary change was minor and did not affect the SMA boundary or sampler location. The updated boundary is shown on the project map (Figure 124-1) and the Site physical characteristic information listed in Attachment 4 has been updated.

### 124.2 Control Measures

The major sources of potential run-on at this SMA are two storm culverts, roof drains, and paved areas in the northern portion of the SMA. This run-on contribution is significant. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 124-1).

**Table 124-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
T00602010001	Established Vegetation - Grasses and Shrubs			X		CB
T00602020002	Established Vegetation - Forested/Needle Cast			X		CB
T00603030009	Berms - Log		X		X	CB
T00603030010	Berms - Log		X		X	CB
T00603090005	Berms - Curbing	X			X	CB
T00604060004	Channel/Swale - Riprap		X	X		CB
T00606010006	Check Dam - Rock	X			X	CB
T00606010007	Check Dam - Rock	X			X	CB
T00606010008	Check Dam - Rock	X			X	CB
T00607010003	Gabions - Gabions		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 124.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at T-SMA-4. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 124.4 Inspections and Maintenance

RG200.5 recorded one storm event at T-SMA-4 during the 2012 season. These rain events triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 124-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23468	05-30-2012
Storm Rain Event	BMP-28729	10-23-2012

There were no maintenance activities conducted at T-SMA-4 in 2012.

**124.5 Compliance Status**

The Sites associated with T-SMA-4 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 124-3 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 35-004(a)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 35-009(a)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 35-016(c)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 35-016(d)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

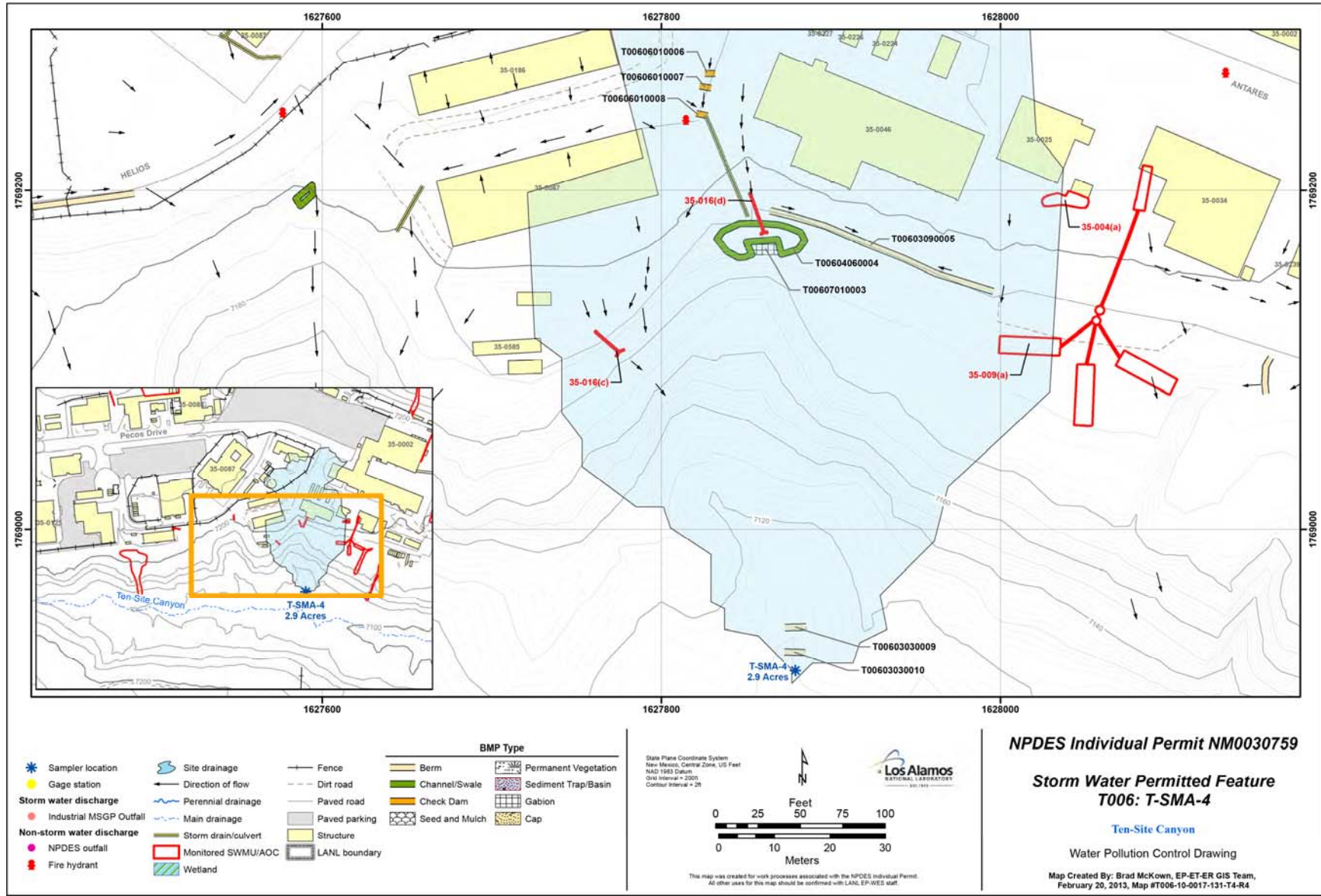


Figure 124-1 T-SMA-4 location map



## **125.0 T-SMA-5: SWMUs 35-004(a), 35-009(a), 35-016(a), and 35-016(q)**

### **125.1 Site Descriptions**

Four historical industrial activity areas are associated with T007, T-SMA-5: Sites 35-004(a), 35-009(a), 35-016(a), and 35-016(q).

SWMU 35-004(a) consists of a former outdoor SAA located on asphalt next to the southeast corner of building 35-25. Waste accumulated in the SAA reportedly included small quantities of waste oils and solvents. Staining was observed at the site during a 1988 reconnaissance and during a 1990 site inspection. A temporary metal flammable storage structure, 35-386, was placed at the site in 1990 and used as the SAA. According to the Laboratory's RCRA database, the SWMU 35-004(a) SAA was taken out of service in April 1997; however, structure 35-0386 remains at the site for hazardous materials storage.

SWMU 35-009(a) is an inactive septic system that served building 35-2 from 1951 to 1975. The septic system is located near the southwest corner of building 35-4 and consists of a septic tank (structure 35-14), dosing chamber (structure 35-15), a distribution box (structure 35-16), clean out, associated drainline, and a leach field located on the south-facing slope of Ten Site Canyon. The septic tank is approximately 4 ft bgs measuring 10 ft long × 4 ft wide × 5 ft deep with a capacity of 1500 gal. The location of the drainline is not known. The septic system received sanitary wastes from building 35-2. Historical operations at building 35-2 involved the use of lanthanum-140. In addition, two nuclear reactors as well as plutonium laboratories and lithium titride operations were housed in building 35-2. A 1968 memorandum indicates the leach field was plugged and the system was daylighted. In 1975, the remainder of the septic system was taken out of service but was left in place. Portions of the leach field were excavated when the new sanitary sewer lines were routed to the sewage lagoons [Consolidated Unit 35-010(a)-99] located east of TA-35 in Ten Site Canyon.

SWMU 35-016(a) is a formerly permitted outfall that originally consisted of an 8-in.-diameter metal pipe with a valve and a 6-in. VCP placed in a trench cut into the tuff that discharged into Ten Site Canyon. The outfall was established in 1958 to handle noncontact cooling water from the sodium testing building (35-34). The formerly permitted outfall was eliminated from the NPDES permit in 1985. The drainlines were decommissioned and removed in 1987, and the trench now serves as a storm water collection channel for a small area on the south side of Ten Site Mesa at TA-35. Aerial photographs from 1965 show a diagonal trench extending from the north end of SWMU 35-016(a) in a southeasterly direction that appears to connect with the north end of SWMU 35-016(q). Aerial photographs from 1974 show that the diagonal trench and approximately two-thirds of the northern portion of the SWMU were no longer present and may have been backfilled. The 1974 aerial photographs show this site to be much the same as it appeared in the mid-1990s. SWMU 35-016(a) along with SWMU 35-016(q) is a component of Consolidated Unit 35-016(a)-00.

SWMU 35-016(q) consists of a trench cut into the tuff, parallel to and about 60 ft east of SWMU 35-016(a). The trench includes several active storm water collection basins located between building 35-34 and the edge of Ten Site Canyon. The trench discharges storm water to the same area in Ten Site Canyon as SWMU 35-016(a). SWMU 35-016(q) along with SWMU 35-016(a) was also constructed in 1958. SWMU 35-016(q) is a component of Consolidated Unit 35-016(a)-00.

The project map (Figure 125-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.



### 125.2 Control Measures

The primary sources of potential run-on at this SMA are the storm culverts, roof drainage, and paved areas to the north of the SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 125-1).

**Table 125-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
T00702010005	Established Vegetation - Grasses and Shrubs			X		CB
T00702020007	Established Vegetation - Forested/Needle Cast			X		CB
T00703020003	Berms - Base Course	X			X	CB
T00703020008	Berms - Base Course	X			X	CB
T00703120010	Berms - Rock		X		X	CB
T00706010002	Check Dam - Rock		X		X	CB
T00706010004	Check Dam - Rock		X		X	CB
T00706010009	Check Dam - Rock	X			X	CB
T00706010011	Check Dam - Rock		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 125.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at T-SMA-5. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 125.4 Inspections and Maintenance

RG200.5 recorded one storm event at T-SMA-5 during the 2012 season. These rain events triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 125-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23469	05-30-2012
Storm Rain Event	BMP-28730	10-23-2012

There were no maintenance activities conducted at T-SMA-5 in 2012.

**125.5 Compliance Status**

The Sites associated with T-SMA-5 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 125-3 Compliance Status during 2012**

<b>Site</b>	<b>Compliance Status on Jan 1, 2012</b>	<b>Compliance Status on Dec 31, 2012</b>	<b>Comments</b>
SWMU 35-004(a)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 35-009(a)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 35-016(a)	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 35-016(q)	Baseline Monitoring	Baseline Monitoring Extended	No Comment

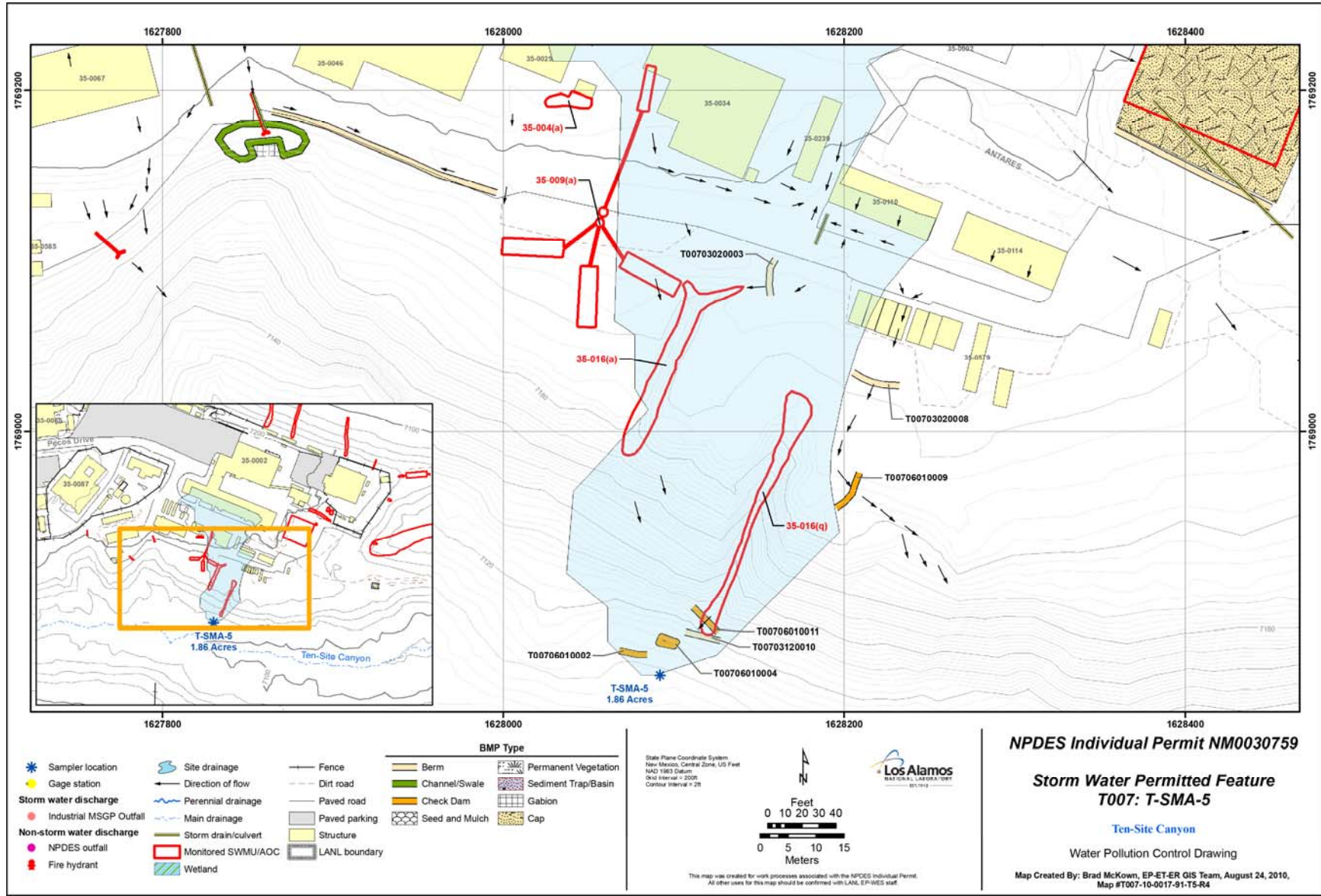


Figure 125-1 T-SMA-5 location map

## 126.0 T-SMA-6.8: AOC 35-010(e)

### 126.1 Site Descriptions

One historical industrial activity area is associated with T008, T-SMA-6.8: Site 35-010(e).

AOC 35-010(e) is a former NPDES permitted outfall that discharged from the SWMU 35-010(d) filter beds into Ten Site Canyon. A depth-recording gage station is located at the outfall and measured the effluent level above a small V-shaped weir discharge point. A rock dissipater apron is present at the discharge point. Compiled flow records of the outfall show that the average flow rate was approximately 45,000 gal./d, exceeding the planned capacity of 12,000 gal./d. AOC 35-010(e) along with SWMUs 35-010(a–d) is a component of Consolidated Unit 35-010(a)-99, all of which were components of the former TA-35 WWTP. The consolidated unit includes three sewage lagoons, four filter beds, and an outfall. The system, which was used for the biological treatment of liquid waste, received sanitary and industrial wastewater from TA-35, TA-48, TA-50, and TA-55 from 1975 to 1992.

The project map (Figure 126-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 126.2 Control Measures

The primary source of potential run-on at this SMA is the channel west of the SWMU. The sand beds are surrounded by a cement retaining wall and are not impacted by run-on. The outfall pipe associated with these sand filters was plugged in 2008. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 126-1).

**Table 126-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
T00802010001	Established Vegetation - Grasses and Shrubs			X		CB
T00803060002	Berms - Straw Wattles	X			X	CB
T00803100003	Berms - Gravel Bags		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 126.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at T-SMA-6.8. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 126.4 Inspections and Maintenance

RG200.5 recorded one storm event at T-SMA-6.8 during the 2012 season. These rain events triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 126-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23470	05-30-2012
Storm Rain Event	BMP-28731	10-22-2012

There were no maintenance activities conducted at T-SMA-6.8 in 2012.

**126.5 Compliance Status**

The Site associated with T-SMA-6.8 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 126-3 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
AOC 35-010(e)	Baseline Monitoring	Baseline Monitoring Extended	No Comment



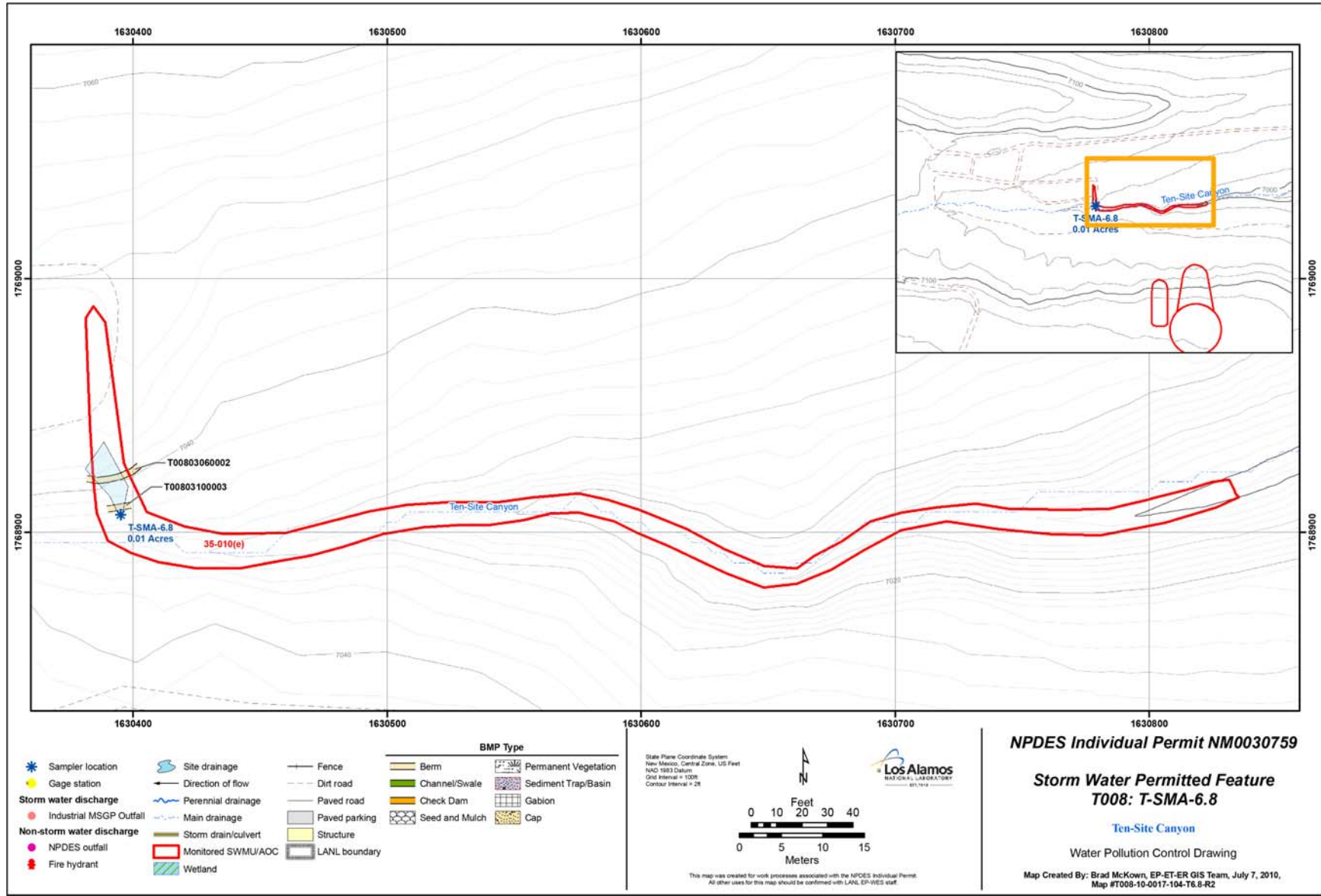


Figure 126-1 T-SMA-6.8 location map

## 127.0 T-SMA-7: SWMU 04-003(b)

### 127.1 Site Descriptions

One historical industrial activity area is associated with T009, T-SMA-7: Site 04-003(b).

SWMU 04-003(b) is the former drainline and outfall from a laboratory control building (04-3), located at former TA-04. The outfall discharged about 20 ft north of building 04-3 into Mortandad Canyon. No radioactivity was detected in a 1953 survey, and the building was demolished and partially removed in 1956. The concrete storm drain, electrical conduit, wood and other surface debris, and the drainpipe were removed during the 1985 LASCP cleanup effort. During the LASCP cleanup, a portable radiation monitor was used, and no radioactive contamination was detected. In a 1988 survey, gamma radiation was detected at nearly twice the background level. SWMUs 04-001, 04-002, and 04-003(b) are components of Consolidated Unit 04-001-99. Former TA-04, known as Alpha Site, lies within the current boundaries of TA-63 and TA-52. Alpha Site is located on Mesita del Buey, a small finger mesa that extends east from the main Pajarito Mesa. It is bounded on the north by Ten Site Canyon and on the south by Cañada del Buey. Alpha Site was established in 1944 as a test firing site for small charges. It was used for implosion studies using the “electric” method of detonation wave determination. Maximum charges fired were 2000 lb. Other documented studies at Alpha Site included smaller tests of the “pin shot” and “magnetic” methods of studying implosions and “equation-of-state” experiments. The use of Alpha Site was discontinued in 1946, and the site underwent D&D in 1985 as part of the LASCP.

The project map (Figure 127-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 127.2 Control Measures

There are minimal run-on contributions from sources at this SMA. The paved access road is crowned to the north and south and is flat. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 127-1).

**Table 127-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
T00901030010	Seed and Mulch - Hydromulch			X		B
T00902010001	Established Vegetation - Grasses and Shrubs			X		CB
T00903010009	Berms - Earthen	X			X	B
T00903020008	Berms - Base Course	X			X	CB
T00906010002	Check Dam - Rock		X		X	CB
T00906010003	Check Dam - Rock		X		X	CB
T00906010006	Check Dam - Rock		X		X	CB
T00906010007	Check Dam - Rock		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 127.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at T-SMA-7. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 127.4 Inspections and Maintenance

RG200.5 recorded one storm event at T-SMA-7 during the 2012 season. These rain events triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 127-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23471	05-30-2012
Storm Rain Event	BMP-28732	10-22-2012

There were no maintenance activities conducted at T-SMA-7 in 2012.

### 127.5 Compliance Status

The Site associated with T-SMA-7 is a moderate priority Site. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 127-3 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 04-003(b)	Baseline Monitoring	Baseline Monitoring Extended	No Comment



T-SMA-7, Base Course Berm, T00903020008 (photo ID 8665-5)



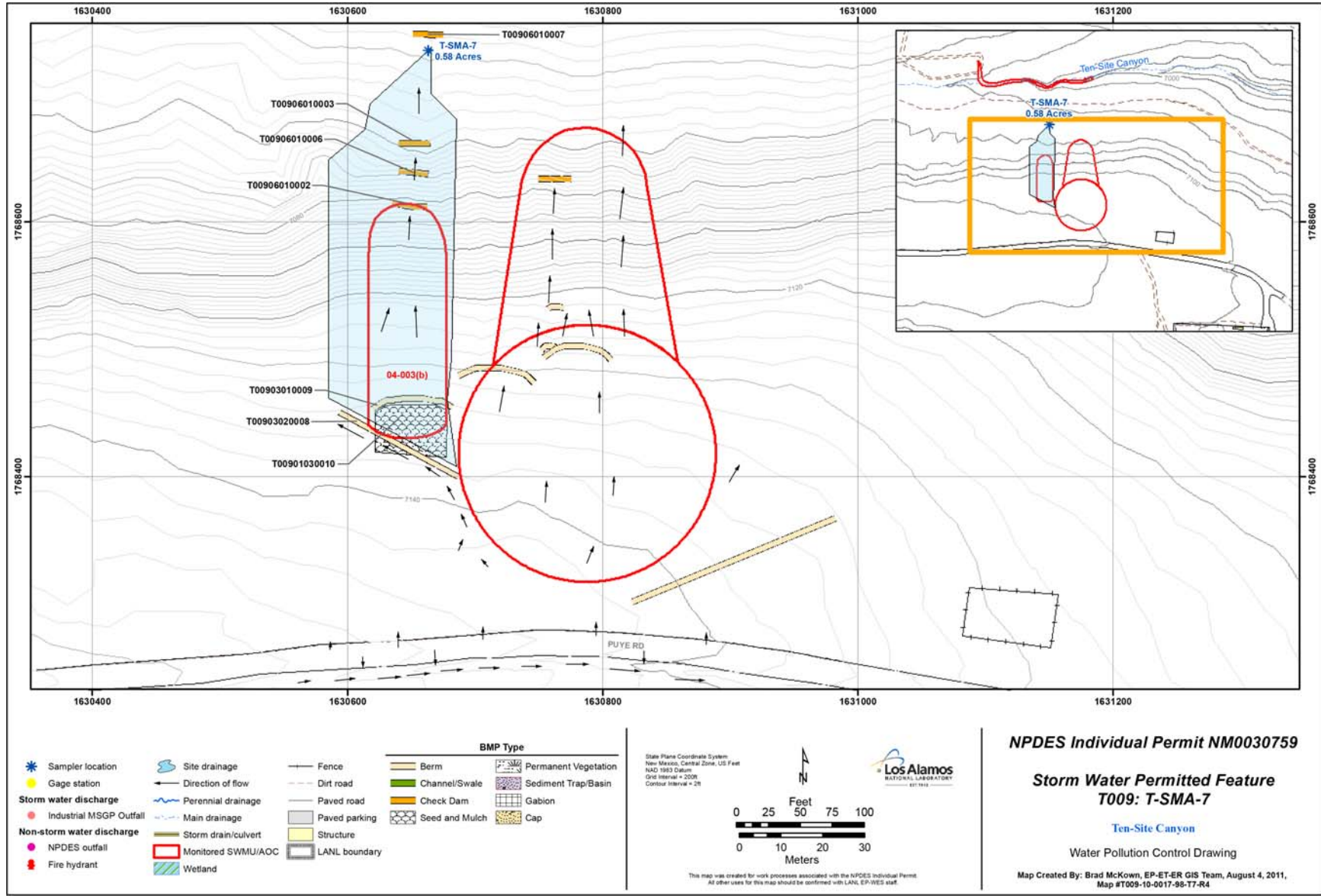


Figure 127-1 T-SMA-7 location map

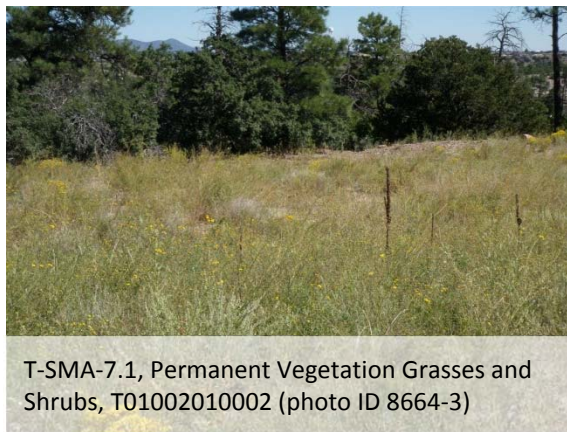
## 128.0 T-SMA-7.1: SWMUs 04-001 and 04-002

### 128.1 Site Descriptions

Two historical industrial activity areas are associated with T010, T-SMA-7.1: Sites 04-001 and 04-002.

SWMU 04-001 was a 10-square-ft firing pit constructed in 1945. Debris in the vicinity of the firing pit included wire and shrapnel. The energy source for the firing experiments was HE, and shot sizes ranged from 0.5 to 2000 lb of HE. The pit was cleaned of all debris, backfilled, and contoured in 1985 during the LASCP cleanup effort. Wastes were disposed of at TA-54. The ground surface was scraped clear of vegetation and topsoil following the 1985 cleanup. SWMUs 04-001, 04-002, and 04-003(b) are components of Consolidated Unit 04-001-99. Former TA-04, known as Alpha Site, lies within the current boundaries of TA-63 and TA-52. Alpha Site is located on Mesita del Buey, a small finger mesa that extends east from the main Pajarito Mesa. It is bounded on the north by Ten Site Canyon and on the south by Cañada del Buey. Alpha Site was established in 1944 as a test firing site for small charges. It was used for implosion studies using the "electric" method of detonation wave determination. Maximum charges fired were 2000 lb. Other documented studies at Alpha Site included smaller tests of the "pin shot" and "magnetic" methods of studying implosions and "equation-of-state" experiments. The use of Alpha Site was discontinued in 1946, and the site underwent D&D in 1985 as part of the LASCP.

SWMU 04-002 is the 20-ft-wide canyon-side disposal site associated with 04-001. The site is located on the north-facing slope of Mortandad Canyon, immediately north of SWMU 04-001. After a shot, residual material from the firing site was bulldozed over the edge of the canyon to the area designated as the surface disposal site. The shot debris consisted of cables, wires, and possibly small amounts of uranium, beryllium, lead, aluminum, and HE. The material was not covered, and this site was not addressed during the 1985 LASCP.



T-SMA-7.1, Permanent Vegetation Grasses and Shrubs, T01002010002 (photo ID 8664-3)

SWMUs 04-001, 04-002, and 04-003(b) are components of Consolidated Unit 04-001-99. Former TA-04, known as Alpha Site, lies within the current boundaries of TA-63 and TA-52. Alpha Site is located on Mesita del Buey, a small finger mesa that extends east from the main Pajarito Mesa. It is bounded on the north by Ten Site Canyon and on the south by Cañada del Buey. Alpha Site was established in 1944 as a test firing site for small charges. It was used for implosion studies using the "electric" method of detonation wave determination. Maximum charges fired were 2000 lb. Other documented studies at Alpha Site included smaller tests of the "pin shot" and "magnetic" methods of studying implosions and "equation-of-state" experiments. The use of Alpha Site was discontinued in 1946, and the site underwent D&D in 1985 as part of the LASCP.

The project map (Figure 128-1) is located at the end of this SMA update. Any future map updates will be posted on the IP website: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/compliance/individual-permit-stormwater/site-monitoring-area-maps.php>.

### 128.2 Control Measures

The primary potential source of run-on to the SMA is from the paved road and unpaved area northeast of the SMA. All active control measures are listed in the following table, and their locations are shown on the project map (Figure 128-1).



**Table 128-1 Active Control Measures**

Control ID	Control Name	Purpose of Control				Control Status
		Run-On	Runoff	Erosion	Sediment	
T01002010002	Established Vegetation - Grasses and Shrubs			X		CB
T01003010007	Berms - Earthen		X		X	B
T01003010008	Berms - Earthen		X		X	B
T01003020005	Berms - Base Course	X			X	CB
T01006020006	Check Dam - Log		X		X	CB

CB: Certified baseline control measure.

B: Additional baseline control measure.

EC: Enhanced control measure.

### 128.3 Storm Water Monitoring

For calendar year 2012, storm water flow has not been sufficient for full-volume sample collection at T-SMA-7.1. Initial confirmation sampling will continue until one confirmation sample is collected from this SMA.

### 128.4 Inspections and Maintenance

RG200.5 recorded one storm event at T-SMA-7.1 during the 2012 season. These rain events triggered one post-storm inspection. Post-storm inspections and all other inspection activity conducted at the SMA are summarized below.

**Table 128-2 Control Measure Inspections during 2012**

Inspection Type	Inspection Reference	Inspection Date
Annual Erosion Evaluation	COMP-23472	05-30-2012
Storm Rain Event	BMP-28733	10-22-2012

There were no maintenance activities conducted at T-SMA-7.1 in 2012.

### 128.5 Compliance Status

The Sites associated with T-SMA-7.1 are moderate priority Sites. Corrective action is to be certified complete within 5 yr of the effective date of the IP (i.e., November 2015).

**Table 128-3 Compliance Status during 2012**

Site	Compliance Status on Jan 1, 2012	Compliance Status on Dec 31, 2012	Comments
SWMU 04-001	Baseline Monitoring	Baseline Monitoring Extended	No Comment
SWMU 04-002	Baseline Monitoring	Baseline Monitoring Extended	No Comment

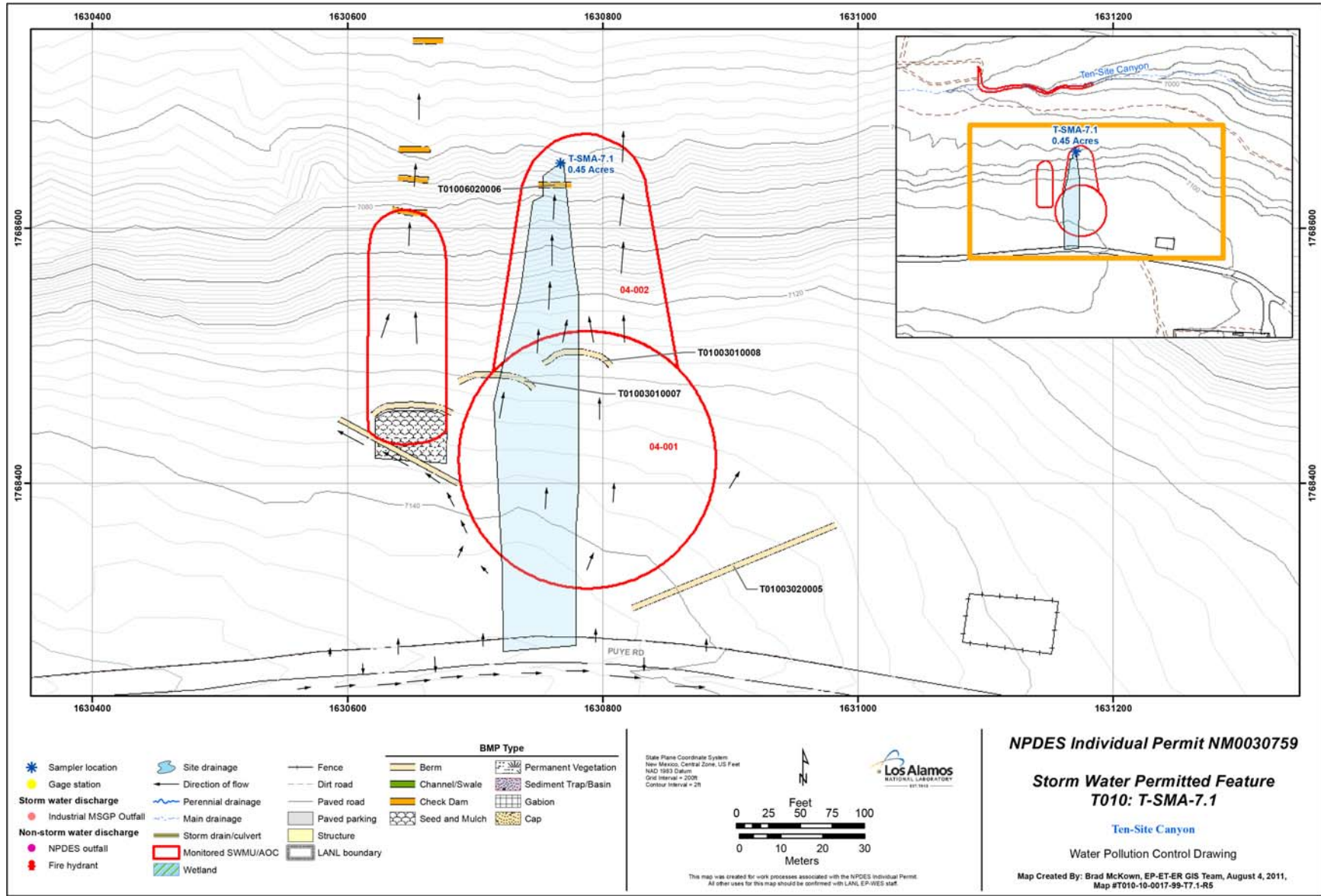


Figure 128-1 T-SMA-7.1 location map

## Attachment 1 Amendments

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V2.188	05-16-2012	M-SMA-1.2	Map Revision (R6)	T	CCN - 22724
V2.189	05-29-2012	M-SMA-1.2	Retire Control - Lifecycle Expired Control ID: M002-03-06-0006	T	CCN - 23727
V2.190	06-12-2012	M-SMA-1.2	Map Revision (R7)	T	CCN - 23727
V2.191	05-29-2012	S-SMA-3.72	Retire Control - Lifecycle Expired Control ID: S009-01-03-0011	T	CCN - 23725
V2.192	06-12-2012	S-SMA-3.72	Map Revision (R6)	T	CCN - 23725
V2.193	05-29-2012	S-SMA-5	Retire Control - Lifecycle Expired Control ID: S013-07-01-0002	T	CCN - 23726
V2.194	06-12-2012	S-SMA-5	Map Revision (R5)	T	CCN - 23726
V2.195	05-23-2012	S-SMA-2.8	Retire Control - Damaged and/or Replaced Control ID: S004-03-06-0002	T	CCN - 23956
V2.196	05-23-2012	S-SMA-2.8	New Control - Routine/Replacement Control ID: S004-03-06-0006	T	CCN - 23956
V2.197	06-12-2012	S-SMA-2.8	Map Revision (R5)	T	CCN - 23956
V2.198	05-23-2012	T-SMA-3	Retire Control - Damaged and/or Replaced Control ID: T005-06-02-0007	T	CCN - 23959
V2.199	05-23-2012	T-SMA-3	Retire Control - Damaged and/or Replaced Control ID: T005-06-02-0008	T	CCN - 23959
V2.200	05-23-2012	T-SMA-3	New Control - Routine/Replacement Control ID: T005-06-02-0009	T	CCN - 23959
V2.201	05-23-2012	T-SMA-3	New Control - Routine/Replacement Control ID: T005-06-02-0010	T	CCN - 23959
V2.202	06-12-2012	T-SMA-3	Map Revision (R4)	T	CCN - 23959
V2.203	06-07-2012	Pratt-SMA-1.05	Retire Control - Lifecycle Expired Control ID: T001-01-01-0019	T	CCN - 24166
V2.204	06-12-2012	Pratt-SMA-1.05	Map Revision (R4)	T	CCN - 24166
V2.205	05-29-2012	S-SMA-2	New Control - Augment Existing Control ID: S003-04-06-0011	T	CCN - 23539
V2.206	06-12-2012	S-SMA-2	Map Revision (R5)	T	CCN - 23539
V2.207	05-30-2012	CDB-SMA-1.54	Retire Control - Lifecycle Expired Control ID: C007-01-01-0013	T	CCN - 23953
V2.208	05-30-2012	CDB-SMA-1.54	Retire Control - Lifecycle Expired Control ID: C007-01-06-0010	T	CCN - 23953
V2.209	05-30-2012	CDB-SMA-1.54	Retire Control - Lifecycle Expired Control ID: C007-01-06-0011	T	CCN - 23953

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V2.210	05-30-2012	CDB-SMA-1.54	Retire Control - Lifecycle Expired Control ID: C007-01-06-0012	T	CCN - 23953
V2.211	06-12-2012	CDB-SMA-1.54	Map Revision (R6)	T	CCN - 23953
V2.212	06-07-2012	S-SMA-0.25	Retire Control - Lifecycle Expired Control ID: S001-03-06-0009	T	CCN - 24165
V2.213	06-12-2012	S-SMA-0.25	Map Revision (R4)	T	CCN - 24165
V2.214	06-12-2012	M-SMA-11.1	New Control - Augment Existing Control ID: M014-03-10-0007	T	CCN - 24254
V2.215	06-19-2012	M-SMA-11.1	Map Revision (R5)	T	CCN - 24254
V2.216	06-12-2012	S-SMA-4.5	Retire Control - Damaged and/or Replaced Control ID: S012-03-06-0004	T	CCN - 24255
V2.217	06-12-2012	S-SMA-4.5	New Control - Routine/Replacement Control ID: S012-03-06-0006	T	CCN - 24255
V2.218	06-19-2012	S-SMA-4.5	Map Revision (R5)	T	CCN - 24255
V2.219	06-13-2012	M-SMA-7	Retire Control - Damaged and/or Replaced Control ID: M009-03-06-0005	T	CCN - 24257
V2.220	06-13-2012	M-SMA-7	New Control - Routine/Replacement Control ID: M009-03-06-0006	T	CCN - 24257
V2.221	06-19-2012	M-SMA-7	Map Revision (R4)	T	CCN - 24257
V2.222	05-29-2012	M-SMA-6	Retire Control - Lifecycle Expired Control ID: M008-01-06-0015	T	CCN - 24167
V2.223	06-06-2012	M-SMA-6	Retire Control - Damaged and/or Replaced Control ID: M008-06-01-0008	T	CCN - 24167
V2.224	06-06-2012	M-SMA-6	Retire Control - Damaged and/or Replaced Control ID: M008-06-01-0009	T	CCN - 24167
V2.225	06-06-2012	M-SMA-6	New Control - Routine/Replacement Control ID: M008-06-01-0021	T	CCN - 24167
V2.226	06-06-2012	M-SMA-6	New Control - Routine/Replacement Control ID: M008-06-01-0022	T	CCN - 24167
V2.227	06-06-2012	M-SMA-6	New Control - Routine/Replacement Control ID: M008-06-01-0023	T	CCN - 24167
V2.228	06-13-2012	M-SMA-6	Map Revision (R9)	T	CCN - 24167
V2.229	07-26-2012	M-SMA-12.6	Retire Control - Damaged and/or Replaced Control ID: M017-03-06-0009	T	CCN - 26019
V2.230	07-26-2012	M-SMA-12.6	New Control - Routine/Replacement Control ID: M017-03-06-0012	T	CCN - 26019
V2.231	08-05-2012	M-SMA-12.6	Map Revision (R5)	T	CCN - 26019
V2.232	07-24-2012	M-SMA-12.9	Retire Control - Damaged and/or Replaced Control ID: M020-03-06-0003	T	CCN - 25593
V2.233	07-24-2012	M-SMA-12.9	New Control - Routine/Replacement Control ID: M020-03-06-0010	T	CCN - 25593

**Attachment 1, Amendments (continued)**

<b>Amendment Number</b>	<b>Effective Date</b>	<b>SMA Number or Section Number</b>	<b>Description of Changes</b>	<b>Type of Change [Technical (T), Documentation (D), or Errata (E)]</b>	<b>Reference</b>
V2.234	08-06-2012	M-SMA-12.9	Map Revision (R4)	T	CCN - 25593
V2.235	08-01-2012	S-SMA-0.25	New Control - Augment Existing Control ID: S001-04-06-0010	T	CCN - 26293
V2.236	08-07-2012	S-SMA-0.25	Map Revision (R7)	T	CCN - 26293
V2.237	05-31-2012	CDB-SMA-0.25	Retire Control - Lifecycle Expired Control ID: C002-04-06-0001	T	CCN - 23747
V2.238	05-31-2012	CDB-SMA-0.25	Retire Control - Damaged and/or Replaced Control ID: C002-01-06-0014	T	CCN - 23747
V2.239	05-31-2012	CDB-SMA-0.25	Retire Control - Damaged and/or Replaced Control ID: C002-06-02-0007	T	CCN - 23747
V2.240	05-31-2012	CDB-SMA-0.25	Retire Control - Damaged and/or Replaced Control ID: C002-06-02-0010	T	CCN - 23747
V2.241	05-31-2012	CDB-SMA-0.25	Retire Control - Damaged and/or Replaced Control ID: C002-06-02-0012	T	CCN - 23747
V2.242	05-31-2012	CDB-SMA-0.25	New Control - Corrective Action Control ID: C002-03-01-0017	T	CCN - 23747
V2.243	05-31-2012	CDB-SMA-0.25	New Control - Corrective Action Control ID: C002-03-01-0018	T	CCN - 23747
V2.244	08-09-2012	CDB-SMA-0.25	Site Boundary Modification	T	CCN - 23747
V2.245	06-13-2012	CDB-SMA-0.25	Map Revision (R4)	T	CCN - 23747
V2.246	08-13-2012	M-SMA-12.8	Retire Control - Damaged and/or Replaced Control ID: M019-03-06-0007	T	CCN - 26556
V2.247	08-13-2012	M-SMA-12.8	New Control - Routine/Replacement Control ID: M019-03-06-0009	T	CCN - 26556
V2.248	08-15-2012	M-SMA-12.8	Map Revision (R6)	T	CCN - 26556
V2.249	08-13-2012	M-SMA-12.7	Retire Control - Damaged and/or Replaced Control ID: M018-03-06-0006	T	CCN - 26557
V2.250	08-13-2012	M-SMA-12.7	New Control - Routine/Replacement Control ID: M018-03-06-0011	T	CCN - 26557
V2.251	08-15-2012	M-SMA-12.7	Map Revision (R6)	T	CCN - 26557
V2.252	08-13-2012	M-SMA-12.9	Retire Control - Damaged and/or Replaced Control ID: M020-03-06-0007	T	CCN - 26562
V2.253	08-13-2012	M-SMA-12.9	New Control - Routine/Replacement Control ID: M020-03-06-0011	T	CCN - 26562
V2.254	08-15-2012	M-SMA-12.9	Map Revision (R5)	T	CCN - 26562
V2.255	08-17-2012	CDB-SMA-0.55	Site Boundary Modification	T	CCN - 24187
V2.256	08-17-2012	CDB-SMA-0.55	Map Revision (R5)	T	CCN - 24187
V2.257	07-09-2012	CDB-SMA-1	New Control - Corrective Action Control ID: C004-03-01-0014	T	CCN - 25068



**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V2.258	07-12-2012	CDB-SMA-1	Map Revision (R5)	T	CCN - 25068
V2.259	07-18-2012	CDB-SMA-1	Site Boundary Modification	T	CCN - 25068
V2.260	06-04-2012	S-SMA-2.01	Retire Control - Lifecycle Expired Control ID: S003A-04-06-0002	T	CCN - 23986
V2.261	06-11-2012	S-SMA-2.01	Map Revision (R5)	T	CCN - 23986
V2.262	08-15-2012	M-SMA-12.6	Retire Control - Damaged and/or Replaced Control ID: M017-01-03-0011	T	CCN - 26807
V2.263	08-15-2012	M-SMA-12.6	New Control - Routine/Replacement Control ID: M017-01-01-0013	T	CCN - 26807
V2.264	08-29-2012	M-SMA-12.6	Map Revision (R6)	T	CCN - 26807
V2.265	06-04-2012	M-SMA-12	Retire Control - Lifecycle Expired Control ID: M015-04-05-0005	T	CCN - 27319
V2.266	09-05-2012	M-SMA-12	Map Revision (R7)	T	CCN - 27319
V2.267	05-29-2012	S-SMA-3.71	Retire Control - Lifecycle Expired Control ID: S008-01-03-0015	T	CCN - 27320
V2.268	09-05-2012	S-SMA-3.71	Map Revision (R4)	T	CCN - 27320
V2.269	08-30-2012	T-SMA-3	New Control - Routine/Replacement Control ID: T005-06-02-0011	T	CCN - 27279
V2.270	09-05-2012	T-SMA-3	Map Revision (R5)	T	CCN - 27279
V2.271	08-21-2012	M-SMA-10.01	Retire Control - Damaged and/or Replaced Control ID: M012A-03-06-0004	T	CCN - 26851
V2.272	08-21-2012	M-SMA-10.01	New Control - Corrective Action Control ID: M012A-03-01-0006	T	CCN - 26851
V2.273	08-21-2012	M-SMA-10.01	New Control - Corrective Action Control ID: M012A-03-01-0007	T	CCN - 26851
V2.274	08-23-2012	M-SMA-10.01	SMA Boundary Modification	T	CCN - 26851
V2.275	08-23-2012	M-SMA-10.01	Minor Sampler Adjustment, Updated Coordinates in Attachment 4	T	CCN - 26851
V2.276	08-23-2012	M-SMA-10.01	Map Revision (R5)	T	CCN - 26851
V2.277	09-05-2012	CDB-SMA-1.35	Retire Control - Damaged and/or Replaced Control ID: C006-01-06-0007	T	CCN - 27339
V2.278	09-06-2012	CDB-SMA-1.35	Map Revision (R3)	T	CCN - 27339
V2.279	09-06-2012	S-SMA-4.1	Retire Control - Damaged and/or Replaced Control ID: S011-06-01-0004	T	CCN - 27304
V2.280	09-06-2012	S-SMA-4.1	Retire Control - Damaged and/or Replaced Control ID: S011-03-12-0003	T	CCN - 27304

**Attachment 1, Amendments (continued)**

<b>Amendment Number</b>	<b>Effective Date</b>	<b>SMA Number or Section Number</b>	<b>Description of Changes</b>	<b>Type of Change [Technical (T), Documentation (D), or Errata (E)]</b>	<b>Reference</b>
V2.281	09-06-2012	S-SMA-4.1	Retire Control - Damaged and/or Replaced Control ID: S011-02-02-0002	T	CCN - 27304
V2.282	09-06-2012	S-SMA-4.1	New Control - Corrective Action Control ID: S011-03-09-0005	T	CCN - 27304
V2.283	09-06-2012	S-SMA-4.1	New Control - Corrective Action Control ID: S011-04-02-0006	T	CCN - 27304
V2.284	09-06-2012	S-SMA-4.1	New Control - Corrective Action Control ID: S011-01-01-0007	T	CCN - 27304
V2.285	09-06-2012	S-SMA-4.1	New Control - Corrective Action Control ID: S011-03-12-0008	T	CCN - 27304
V2.286	09-06-2012	S-SMA-4.1	New Control - Corrective Action Control ID: S011-08-03-0009	T	CCN - 27304
V2.287	09-11-2012	S-SMA-4.1	Map Revision (R4)	T	CCN - 27304
V2.288	09-06-2012	S-SMA-4.1	SMA Boundary Modification	T	CCN - 27304
V2.289	10-10-2012	M-SMA-1	New Control - Corrective Action Control ID: M001-07-01-0008	T	CCN - 28597
V2.290	10-15-2012	M-SMA-1	Map Revision (R3)	T	CCN - 28597
V2.291	10-15-2012	M-SMA-1	SMA Boundary Modification	T	CCN - 28597
V2.292	10-15-2012	M-SMA-1	Minor Sampler Adjustment, Updated Coordinates in Attachment 4	T	CCN - 28597
V2.293	10-17-2012	M-SMA-12.92	Change to SDPPP - Updated Site description for SWMU 00-001	T	
V2.294	10-17-2012	T-SMA-7.1	Change to SDPPP - Updated Site description for SWMU 04-001	T	
V2.295	10-17-2012	T-SMA-7	Change to SDPPP - Updated Site description for SWMU 04-003(b)	T	
V2.296	10-17-2012	M-SMA-12.9	Change to SDPPP - Updated Site description for SWMU 05-001(b)	T	
V2.297	10-17-2012	M-SMA-12.7	Change to SDPPP - Updated Site description for SWMU 05-002	T	
V2.298	10-17-2012	M-SMA-12.7	Change to SDPPP - Updated Site description for SWMU 05-005(a)	T	
V2.299	10-17-2012	M-SMA-12.7	Change to SDPPP - Updated Site description for 05-006(b)	T	
V2.300	10-17-2012	M-SMA-12.8	Change to SDPPP - Updated Site description for SWMU 05-002	T	
V2.301	10-17-2012	M-SMA-12.9	Change to SDPPP - Updated Site description for SWMU 05-002	T	
V2.302	10-17-2012	M-SMA-12.7	Change to SDPPP - Updated Site description for SWMU 05-006(e)	T	
V2.303	10-18-2012	Pratt-SMA-1.05	Change to SDPPP - Updated Site description for SWMU 35-003(h)	T	
V2.304	10-18-2012	Pratt-SMA-1.05	Change to SDPPP - Updated Site description for SWMU 35-003(p)	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V2.305	10-18-2012	Pratt-SMA-1.05	Change to SDPPP - Updated Site description for AOC 35-003(r)	T	
V2.306	10-18-2012	T-SMA-4	Change to SDPPP - Updated Site description for SWMU 35-004(a)	T	
V2.307	10-18-2012	T-SMA-5	Change to SDPPP - Updated Site description for SWMU 35-004(a)	T	
V2.308	10-18-2012	Pratt-SMA-1.05	Change to SDPPP - Updated Site description for SWMU 35-004(h)	T	
V2.309	10-18-2012	M-SMA-10	Change to SDPPP - Updated Site description for SWMU 35-008	T	
V2.310	10-18-2012	T-SMA-4	Change to SDPPP - Updated Site description for SWMU 35-009(a)	T	
V2.311	10-18-2012	T-SMA-5	Change to SDPPP - Updated Site description for SWMU 35-009(a)	T	
V2.312	10-18-2012	Pratt-SMA-1.05	Change to SDPPP - Updated Site description SWMU 25-009(d)	T	
V2.313	10-18-2012	T-SMA-6.8	Change to SDPPP - Updated Site description for AOC 35-010(e)	T	
V2.314	10-18-2012	M-SMA-10	Change to SDPPP - Updated Site description for SWMU 35-014(e)	T	
V2.315	10-18-2012	M-SMA-10.3	Change to SDPPP - Updated Site description for AOC 35-014(e2)	T	
V2.316	10-18-2012	T-SMA-2.85	Change to SDPPP - Updated Site description for SWMU 35-014(g)	T	
V2.317	10-18-2012	T-SMA-2.5	Change to SDPPP - Updated Site description for AOC 35-014(g3)	T	
V2.318	10-18-2012	T-SMA-5	Change to SDPPP - Updated Site description for SWMU 35-016(a)	T	
V2.319	10-18-2012	T-SMA-3	Change to SDPPP - Updated Site description for AOC 35-016(b)	T	
V2.320	10-18-2012	T-SMA-4	Change to SDPPP - Updated Site description for SWMU 35-016(c)	T	
V2.321	10-18-2012	T-SMA-4	Change to SDPPP - Updated Site description for SWMU 35-016(d)	T	
V2.322	10-18-2012	M-SMA-10.01	Change to SDPPP - Updated Site description for AOC 35-016(e)	T	
V2.323	10-18-2012	M-SMA-9.1	Change to SDPPP - Updated Site description for AOC 35-016(f)	T	
V2.324	10-18-2012	M-SMA-10.3	Change to SDPPP - Updated Site description for SWMU 35-016(i)	T	
V2.325	10-18-2012	Pratt-SMA-1.05	Change to SDPPP - Updated Site description for SWMU 35-016(k)	T	
V2.326	10-18-2012	Pratt-SMA-1.05	Change to SDPPP - Updated Site description for AOC 35-016(l)	T	
V2.327	10-18-2012	Pratt-SMA-1.05	Change to SDPPP - Updated Site description for SWMU 35-016(m)	T	
V2.328	10-18-2012	T-SMA-2.85	Change to SDPPP - Updated Site description for AOC 35-016(n)	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V2.329	10-18-2012	M-SMA-11.1	Change to SDPPP - Updated Site description for SWMU 35-016(o)	T	
V2.330	10-18-2012	M-SMA-12	Change to SDPPP - Updated Site description for SWMU 35-016(p)	T	
V2.331	10-18-2012	T-SMA-5	Change to SDPPP - Updated Site description for SWMU 35-016(q)	T	
V2.332	10-18-2012	M-SMA-12.8	Change to SDPPP - Updated Site description for SWMU 05-001(a)	T	
V2.333	10-11-2012	S-SMA-4.1	New Control - Augment Existing Control ID: S011-03-06-0010	T	CCN - 28835
V2.334	10-11-2012	S-SMA-4.1	New Control - Augment Existing Control ID: S011-03-06-0011	T	CCN - 28835
V2.335	10-18-2012	S-SMA-4.1	Map Revision (R5)	T	CCN - 28835
V2.336	10-16-2012	S-SMA-2.01	New Control - Corrective Action Control ID: S003A-05-02-0006	T	CCN - 28885
V2.337	10-16-2012	S-SMA-2.01	New Control - Corrective Action Control ID: S003A-05-02-0007	T	CCN - 28885
V2.338	10-16-2012	S-SMA-2.01	New Control - Corrective Action Control ID: S003A-05-02-0008	T	CCN - 28885
V2.339	10-18-2012	S-SMA-2.01	Map Revision (R6)	T	CCN - 28885
V2.340	10-15-2012	S-SMA-3.6	New Control - Corrective Action Control ID: S006-06-01-0016	T	CCN - 28759
V2.341	10-15-2012	S-SMA-3.6	New Control - Corrective Action Control ID: S006-06-01-0017	T	CCN - 28759
V2.342	10-15-2012	S-SMA-3.6	New Control - Corrective Action Control ID: S006-06-01-0018	T	CCN - 28759
V2.343	10-15-2012	S-SMA-3.6	New Control - Corrective Action Control ID: S006-03-01-0019	T	CCN - 28759
V2.344	10-17-2012	S-SMA-3.6	Map Revision (R5)	T	CCN - 28759
V2.345	10-24-2012	S-SMA-3.95	Retire Control - Damaged and/or Replaced Control ID: S010-03-06-0003	T	CCN - 29282
V2.346	10-24-2012	S-SMA-3.95	Retire Control - Damaged and/or Replaced Control ID: S010-03-06-0004	T	CCN - 29282
V2.347	10-24-2012	S-SMA-3.95	New Control - Routine/Replacement Control ID: S010-03-06-0005	T	CCN - 29282
V2.348	10-24-2012	S-SMA-3.95	New Control - Routine/Replacement Control ID: S010-03-06-0006	T	CCN - 29282
V2.349	10-30-2012	S-SMA-3.95	Map Revision (R3)	T	CCN - 29282
V2.350	10-18-2012	M-SMA-7.9	Minor Sampler Adjustment, Updated Coordinates in Attachment 4	T	CCN - 27303
V2.351	10-31-2012	M-SMA-7.9	SMA Boundary Modification	T	CCN - 27303
V2.352	10-31-2012	M-SMA-7.9	Map Revision (R5)	T	CCN - 27303

**Attachment 1, Amendments (continued)**

<b>Amendment Number</b>	<b>Effective Date</b>	<b>SMA Number or Section Number</b>	<b>Description of Changes</b>	<b>Type of Change [Technical (T), Documentation (D), or Errata (E)]</b>	<b>Reference</b>
V2.353	08-16-2012	S-SMA-5.2	Retire Control - Damaged and/or Replaced Control ID: S014-03-06-0004	T	CCN - 29299
V2.354	08-16-2012	S-SMA-5.2	Retire Control - Damaged and/or Replaced Control ID: S014-03-06-0005	T	CCN - 29299
V2.355	08-16-2012	S-SMA-5.2	New Control - Routine/Replacement Control ID: S014-03-06-0014	T	CCN - 29299
V2.356	08-16-2012	S-SMA-5.2	New Control - Routine/Replacement Control ID: S014-03-06-0015	T	CCN - 29299
V2.357	10-31-2012	S-SMA-5.2	Map Revision (R7)	T	CCN - 29299
V2.358	10-24-2012	M-SMA-7	Retire Control - Damaged and/or Replaced Control ID: M009-03-06-0006	T	CCN - 29440
V2.359	10-24-2012	M-SMA-7	New Control - Routine/Replacement Control ID: M009-03-06-0007	T	CCN - 29440
V2.360	11-02-2012	M-SMA-7	Retire Control - Damaged and/or Replaced Control ID: M009-03-06-0004	T	CCN - 29440
V2.361	11-02-2012	M-SMA-7	New Control - Routine/Replacement Control ID: M009-03-06-0008	T	CCN - 29440
V2.362	11-09-2012	M-SMA-7	Map Revision (R5)	T	CCN - 29440
V2.363	11-07-2012	S-SMA-1.1	Retire Control - Damaged and/or Replaced Control ID: S002-03-01-0004	T	CCN - 29484
V2.364	11-07-2012	S-SMA-1.1	Retire Control - Damaged and/or Replaced Control ID: S002-08-01-0012	T	CCN - 29484
V2.365	11-07-2012	S-SMA-1.1	Retire Control - Damaged and/or Replaced Control ID: S002-03-12-0011	T	CCN - 29484
V2.366	11-07-2012	S-SMA-1.1	New Control - Corrective Action Control ID: S002-05-02-0013	T	CCN - 29484
V2.367	11-07-2012	S-SMA-1.1	New Control - Corrective Action Control ID: S002-04-06-0014	T	CCN - 29484
V2.368	11-07-2012	S-SMA-1.1	New Control - Corrective Action Control ID: S002-04-06-0015	T	CCN - 29484
V2.369	11-07-2012	S-SMA-1.1	New Control - Corrective Action Control ID: S002-04-06-0019	T	CCN - 29484
V2.370	11-07-2012	S-SMA-1.1	New Control - Corrective Action Control ID: S002-04-04-0016	T	CCN - 29484
V2.371	11-07-2012	S-SMA-1.1	New Control - Corrective Action Control ID: S002-03-09-0017	T	CCN - 29484
V2.372	11-07-2012	S-SMA-1.1	New Control - Corrective Action Control ID: S002-03-01-0018	T	CCN - 29484
V2.373	11-09-2012	S-SMA-1.1	Minor Sampler Adjustment, Updated Coordinates in Attachment 4	T	CCN - 29484
V2.374	11-09-2012	S-SMA-1.1	SMA Boundary Modification	T	CCN - 29484
V2.375	11-09-2012	S-SMA-1.1	Map Revision (R8)	T	CCN - 29484



**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V2.376	11-26-2012		Add Reference Document Site Discharge Pollution Prevention Plan, Los Alamos National Laboratory, NPDES Permit No. NM0030759, May 1, 2012, Vol. 2, Sandia/Mortandad Watershed, Receiving Waters: Cañada del Buey, Mortandad Canyon, Sandia Canyon, Ten Site Canyon	D	ERID-215106
V2.377	11-26-2012		Add Reference Document Site Discharge Pollution Prevention Plan for Los Alamos National Laboratory NPDES Permit no. NM0030759, January 4, 2011, Vol. 2, Sandia/Mortandad Watershed	D	LA-UR-11-01552
V2.378	12-05-2012	T-SMA-1	Retire Control - Damaged and/or Replaced Control ID: T002-03-06-0003	T	CCN - 29479
V2.379	12-05-2012	T-SMA-1	New Control - Routine/Replacement Control ID: T002-03-06-0007	T	CCN - 29479
V2.380	12-05-2012	T-SMA-1	New Control - Routine/Replacement Control ID: T002-03-06-0008	T	CCN - 29479
V2.381	12-05-2012	T-SMA-1	New Control - Routine/Replacement Control ID: T002-03-06-0009	T	CCN - 29479
V2.382	12-05-2012	T-SMA-1	New Control - Routine/Replacement Control ID: T002-03-06-0010	T	CCN - 29479
V2.383	12-05-2012	T-SMA-1	New Control - Routine/Replacement Control ID: T002-03-06-0011	T	CCN - 29479
V2.384	12-05-2012	T-SMA-1	New Control - Routine/Replacement Control ID: T002-03-06-0012	T	CCN - 29479
V2.385	12-05-2012	T-SMA-1	Map Revision (R3)	T	CCN - 29479
V2.386	12-07-2012	1.0 Background	Change to SDPPP - Updated hyperlink to public website.	T	
V2.388	12-07-2012	1.0 Background	Change to SDPPP - Removed sentence referencing hyperlink to procedures on public website	T	
V2.389	12-07-2012	1.0 Background	Change to SDPPP - Replaced second and third sentences in second paragraph with, "These procedures reside on the public website and apply to the work activities described in this section."	T	
V2.391	12-07-2012	1.0 Background	Change to SDPPP - Replaced second bullet with, "SOP-5220, EX-ID/PR-ID Project Reviews for the FFCA Project and Individual Permit, describes the process for proactively identifying and managing proposed construction projects that may influence SMAs"	T	

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V2.392	12-07-2012	1.0 Background	Change to SDPPP - Replaced second and third sentences in second paragraph with, "These procedures reside on the public website and apply to the work activities described in this section."	T	
V2.394	12-07-2012	S-SMA-2.8	Change to SDPPP - Updated second sentence with 2012 post-storm inspection data	T	
V2.395	12-07-2012	S-SMA-2.8	Change to SDPPP - For SMAs that have sampled, updated second sentence with 2012 post-storm inspection data	T	
V2.396	12-07-2012	S-SMA-2.8	Change to SDPPP - Changed (2)s to (1)s for all suites in table and removed paragraph under table for SMAs remaining in baseline sampling	T	
V2.397	12-07-2012	S-SMA-2.8	Change to SDPPP - For SMAs remaining in baseline sampling, replaced second and third sentences with, "Initial confirmation sampling will continue as provided above until one confirmation sample is collected from this SMA."	T	
V2.398	12-10-2012	Attachment 1 - Amendments	Change to SDPPP - Suppressed the R1 amendments and only have FY12 amendments in the table	T	
V2.399	12-10-2012	1.0 Background	Add New Procedure	T	
V2.401	12-10-2012	Appendix A: Acronyms	Change to SDPPP – Added Certified Inspector of Sediment and Erosion Control (CISEC) and Certified Professional in Erosion and Sediment Control (CPESC)	T	
V2.402	01-02-2013	CDB-SMA-0.15	Retire Control - Damaged and/or Replaced Control ID: C001-03-12-0010	T	CCN - 30416
V2.403	01-02-2013	CDB-SMA-0.15	Retire Control - Damaged and/or Replaced Control ID: C001-06-01-0011	T	CCN - 30416
V2.404	01-02-2013	CDB-SMA-0.15	Map Revision (R5)	T	CCN - 30416
V2.405	01-02-2013	CDB-SMA-0.15	New Control - Routine/Replacement Control ID: C001-03-06-0014	T	CCN - 30416
V2.406	01-14-2013	S-SMA-3.53	New Control - Corrective Action Control ID: S005B-04-06-0006	T	CCN - 30414
V2.407	01-14-2013	S-SMA-3.53	New Control - Corrective Action Control ID: S005B-08-03-0008	T	CCN - 30414
V2.408	01-14-2013	S-SMA-3.53	SMA Boundary Modification	T	CCN - 30414

**Attachment 1, Amendments (continued)**

Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V2.409	01-14-2013	S-SMA-3.53	Map Revision (R7)	T	CCN - 30414
V2.410	01-14-2013	S-SMA-2.8	New Control - Augment Existing Control ID: S004-08-04-0007	T	CCN - 30345
V2.411	01-14-2013	S-SMA-2.8	Map Revision (R6)	T	CCN - 30345
V2.412	01-23-2013	M-SMA-1	Change to SDPPP - Updated Site description for 03-050(a)	T	
V2.413	02-11-2013	M-SMA-7	Site Boundary Modification	T	CCN - 30369
V2.414	02-11-2013	M-SMA-7	Map Revision (R6)	T	CCN - 30369
V2.415	02-12-2013	M-SMA-3.5	Site Boundary Modification	T	CCN - 30368
V2.416	02-12-2013	M-SMA-3.5	Map Revision (R8)	T	CCN - 30368
V2.417	02-12-2013	M-SMA-7	Site Boundary Modification	T	CCN - 30542
V2.418	02-12-2013	M-SMA-7	Site Boundary Modification	T	CCN - 30542
V2.419	02-12-2013	M-SMA-7	Map Revision (R7)	T	CCN - 30542
V2.420	02-12-2013	M-SMA-1	Site Boundary Modification	T	CCN - 30367
V2.421	02-12-2013	M-SMA-1	Map Revision (R4)	T	CCN - 30367
V2.422	02-14-2013	S-SMA-2	Map Revision (R6)	T	CCN - 26492
V2.423	02-22-2013	M-SMA-12	Site Boundary Modification	T	CCN - 30563
V2.424	02-22-2013	M-SMA-12	Map Revision (R8)	T	CCN - 30563
V2.425	02-22-2013	M-SMA-11.1	Site Boundary Modification	T	CCN - 30562
V2.426	02-22-2013	M-SMA-11.1	Map Revision (R6)	T	CCN - 30562
V2.427	02-22-2013	T-SMA-4	Site Boundary Modification	T	CCN - 30561
V2.428	02-22-2013	T-SMA-4	Map Revision (R4)	T	CCN - 30561
V2.429	02-22-2013	S-SMA-3.52	Site Boundary Modification	T	CCN - 30560
V2.430	02-22-2013	S-SMA-3.52	Map Revision (R5)	T	CCN - 30560
V2.431	02-28-2013	M-SMA-4	Site Boundary Modification	T	CCN - 30542
V2.432	02-28-2013	M-SMA-4	Site Boundary Modification	T	CCN - 30542

**Attachment 1, Amendments (continued)**

<b>Amendment Number</b>	<b>Effective Date</b>	<b>SMA Number or Section Number</b>	<b>Description of Changes</b>	<b>Type of Change [Technical (T), Documentation (D), or Errata (E)]</b>	<b>Reference</b>
V2.433	02-28-2013	M-SMA-4	Map Revision (R7)	T	CCN - 30542
V2.434	03-04-2013	S-SMA-0.25	Site Boundary Modification	T	CCN - 30596
V2.435	03-04-2013	S-SMA-0.25	Map Revision (R6)	T	CCN - 30596
V2.436	03-04-2013	S-SMA-3.6	Site Boundary Modification	T	CCN - 30598
V2.437	03-04-2013	S-SMA-3.6	Map Revision (R6)	T	CCN - 30598
V2.438	03-04-2013	S-SMA-2.8	Site Boundary Modification	T	CCN - 30595
V2.439	03-04-2013	S-SMA-2.8	Map Revision (R7)	T	CCN - 30595
V2.440	03-04-2013	S-SMA-3.53	Site Boundary Modification	T	CCN - 30594
V2.441	03-04-2013	S-SMA-3.53	Map Revision (R8)	T	CCN - 30594
V2.442	03-25-2013	S-SMA-4.1	Change to SDPPP - Updated Site description for AOC 53-014	T	
V2.443	03-25-2013	S-SMA-6	Change to SDPPP - Updated Site description for AOC 72-001	T	
V2.444	03-25-2013	S-SMA-2	Change to SDPPP - Updated Site description for SWMU 03-012(b)	T	
V2.445	03-25-2013	S-SMA-0.25	Change to SDPPP - Updated Site description for SWMU 03-013(a)	T	
V2.446	03-25-2013	S-SMA-3.53	Change to SDPPP - Updated Site description for AOC 03-014(b2)	T	
V2.447	03-25-2013	S-SMA-1.1	Change to SDPPP - Updated Site description for SWMU 03-029	T	
V2.448	03-25-2013	S-SMA-2	Change to SDPPP - Updated Site description for SWMU 03-045(b)	T	
V2.449	03-25-2013	S-SMA-2	Change to SDPPP - Updated Site description for SWMU 03-045(c)	T	
V2.450	03-25-2013	S-SMA-2.01	Change to SDPPP - Updated Site description for AOC 03-052(b)	T	
V2.451	03-25-2013	S-SMA-0.25	Change to SDPPP - Updated Site description for SWMU 03-052(f)	T	
V2.452	03-25-2013	S-SMA-2	Change to SDPPP - Updated Site description for SWMU 03-056(c)	T	
V2.453	03-25-2013	S-SMA-3.6	Change to SDPPP - Updated Site description for SWMU 60-007(b)	T	
V2.454	03-25-2013	CDB-SMA-1	Change to SDPPP - Updated Site description for SWMU 46-003(c)	T	
V2.455	03-25-2013	CDB-SMA-0.25	Change to SDPPP - Updated Site description for SWMU 46-004(c2)	T	
V2.456	03-25-2013	CDB-SMA-1	Change to SDPPP - Updated Site description for SWMU 46-004(d2)	T	

**Attachment 1, Amendments (continued)**

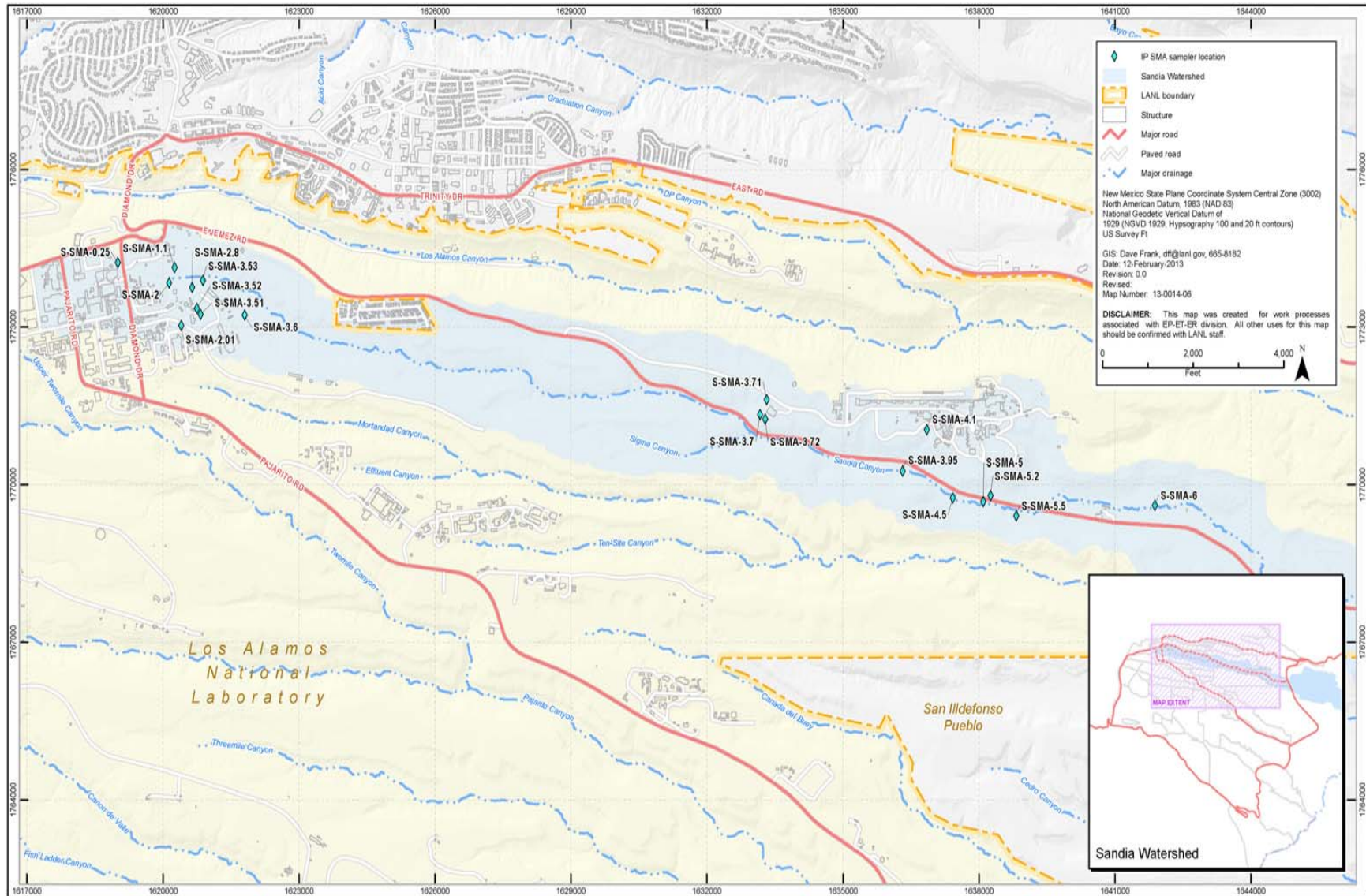
Amendment Number	Effective Date	SMA Number or Section Number	Description of Changes	Type of Change [Technical (T), Documentation (D), or Errata (E)]	Reference
V2.457	03-25-2013	CDB-SMA-1	Change to SDPPP - Updated Site description for SWMU 46-004(f)	T	
V2.458	03-25-2013	CDB-SMA-1	Change to SDPPP - Updated Site description for SWMU 46-004(t)	T	
V2.459	03-25-2013	CDB-SMA-1	Change to SDPPP - Updated Site description for SWMU 46-004(w)	T	
V2.460	03-25-2013	CDB-SMA-1	Change to SDPPP - Updated Site description for SWMU 46-008(g)	T	
V2.461	03-25-2013	CDB-SMA-1	Change to SDPPP - Updated Site description for SWMU 46-009(a)	T	
V2.462	03-25-2013	CDB-SMA-1	Change to SDPPP - Updated Site description for AOC C-46-001	T	
V2.463	03-25-2013	M-SMA-1	Change to SDPPP - Updated Site description for SWMU 03-050(a)	T	
V2.464	03-25-2013	M-SMA-1	Change to SDPPP - Updated Site description for SWMU 03-054(e)	T	
V2.465	03-25-2013	M-SMA-10.3	Change to SDPPP - Updated Site description for AOC 35-014(e2)	T	
V2.466	03-25-2013	M-SMA-10.01	Change to SDPPP - Updated Site description for AOC 35-016(e)	T	
V2.467	03-25-2013	M-SMA-7	Change to SDPPP - Updated Site description for AOC 35-016(g)	T	
V2.468	03-25-2013	M-SMA-6	Change to SDPPP - Updated Site description for AOC 35-016(h)	T	
V2.469	03-25-2013	M-SMA-10.01	Change to SDPPP - Updated Site description for SWMU 35-016(i)	T	
V2.470	03-25-2013	M-SMA-1.22	Change to SDPPP - Updated Site description for SWMU 03-045(h)	T	
V2.471	03-25-2013	M-SMA-3	Change to SDPPP - Updated Site description for AOC 48-001	T	
V2.472	03-25-2013	M-SMA-3.1	Change to SDPPP - Updated Site description for AOC 48-001	T	
V2.473	03-25-2013	M-SMA-3.5	Change to SDPPP - Updated Site description for AOC 48-001	T	
V2.474	03-25-2013	M-SMA-4	Change to SDPPP - Updated Site description for AOC 48-001	T	
V2.475	03-25-2013	M-SMA-3	Change to SDPPP - Updated Site description for SWMU 48-005	T	
V2.476	03-25-2013	M-SMA-4	Change to SDPPP - Updated Site description for SWMU 48-005	T	
V2.477	03-25-2013	M-SMA-4	Change to SDPPP - Updated Site description for SWMU 48-007(a)	T	
V2.478	03-25-2013	M-SMA-4	Change to SDPPP - Updated Site description for SWMU 48-007(d)	T	
V2.479	03-25-2013	M-SMA-4	Change to SDPPP - Updated Site description for SWMU 48-010	T	
V2.480	03-25-2013	T-SMA-1	Change to SDPPP - Updated Site description for SWMU 50-006(a)	T	



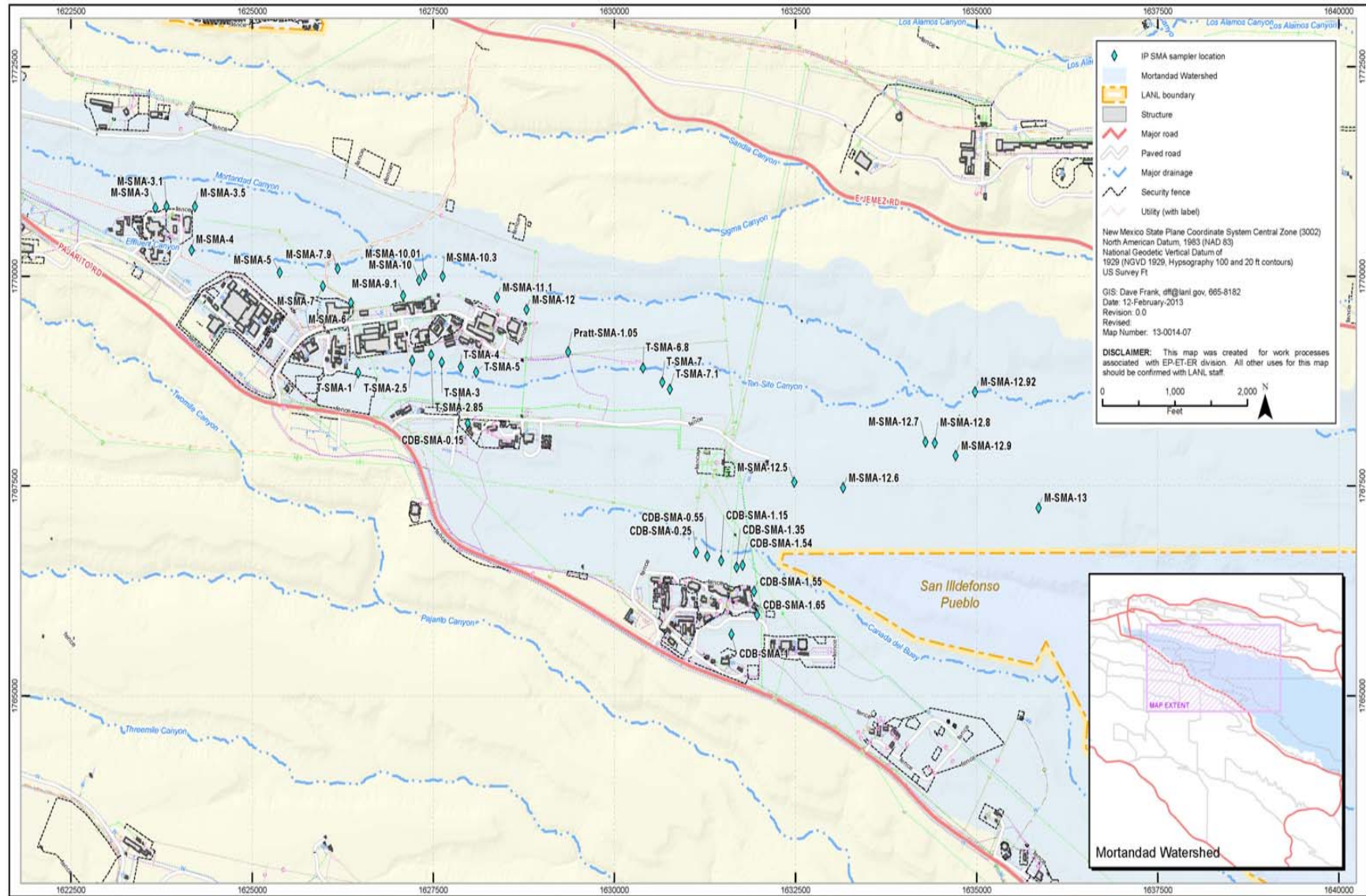
**Attachment 1, Amendments (continued)**

<b>Amendment Number</b>	<b>Effective Date</b>	<b>SMA Number or Section Number</b>	<b>Description of Changes</b>	<b>Type of Change [Technical (T), Documentation (D), or Errata (E)]</b>	<b>Reference</b>
V2.481	03-25-2013	T-SMA-1	Change to SDPPP - Updated Site description for SWMU 50-009	T	
V2.482	03-25-2013	T-SMA-3	Change to SDPPP - Updated Site description for AOC 35-016(b)	T	
V2.483	03-26-2013	CDB-SMA-1.15	Map Revision (R4)	T	CCN - 30935
V2.484	10-15-2012	S-SMA-3.6	New Control - Corrective Action Control ID: S006-03-01-0020	T	CCN - 28759
V2.485	01-14-2013	S-SMA-3.53	New Control - Corrective Action Control ID: S005B-04-06-0007	T	CCN - 30414

# Attachment 2 Vicinity Map



## Attachment 2, Vicinity Map (continued)





## Attachment 3 Precipitation Network

Rain Gage	Date	Total (In.)	Intensity (In./Min)	Duration (Min)
RG-TA-06	May 13, 2012	0.31	0.12	180
	June 28, 2012	0.05	0.03	60
	July 02, 2012	0.11	0.07	120
	July 03, 2012	0.17	0.11	60
	July 04, 2012	0.35	0.23	60
	July 07, 2012	0.08	0.05	60
	July 11, 2012	0.44	0.4	60
	July 13, 2012	0.01	0.01	0
	July 21, 2012	0.01	0.01	0
	July 24, 2012	0.03	0.02	60
	July 25, 2012	0.24	0.24	60
	August 02, 2012	0.18	0.11	120
	August 03, 2012	0.01	0.01	0
	August 05, 2012	0.02	0.01	60
	August 16, 2012	0.29	0.18	60
	August 20, 2012	0.28	0.23	60
	August 22, 2012	0.07	0.02	120
	August 24, 2012	0.23	0.17	60
	September 10, 2012	0.61	0.39	120
	September 27, 2012	0.02	0.02	0
September 28, 2012	0.29	0.25	60	
October 12, 2012	1.02	0.53	180	
RG-TA-53	April 26, 2012	0.01	0.01	0
	May 13, 2012	0.2	0.08	120
	July 02, 2012	0.03	0.02	60
	July 03, 2012	0.06	0.05	60
	July 03, 2012	0.11	0.05	60
	July 07, 2012	0.12	0.1	60
	July 21, 2012	0.21	0.18	60
	July 25, 2012	0.06	0.06	60
	August 02, 2012	0.25	0.07	120
	August 05, 2012	0.45	0.39	120
	August 16, 2012	0.16	0.16	60
	August 20, 2012	0.13	0.06	60
	August 22, 2012	0.3	0.14	120

**Attachment 3, Precipitation Network (continued)**

Rain Gage	Date	Total (In.)	Intensity (In./Min)	Duration (Min)
RG-TA-53	August 24, 2012	0.65	0.5	120
	August 26, 2012	0.03	0.03	60
	September 10, 2012	0.03	0.02	60
	September 27, 2012	0.36	0.35	60
	September 28, 2012	0.21	0.13	60
	October 12, 2012	0.56	0.29	180
RG-TA-54	April 26, 2012	0.01	0.01	0
	May 08, 2012	0.52	0.27	120
	May 13, 2012	0.12	0.04	120
	July 02, 2012	0.88	0.73	120
	July 03, 2012	0.32	0.15	60
	July 04, 2012	0.16	0.14	60
	July 10, 2012	0.22	0.22	60
	July 21, 2012	0.23	0.23	60
	July 25, 2012	0.12	0.1	60
	August 01, 2012	0.3	0.3	60
	August 02, 2012	0.42	0.22	120
	August 05, 2012	0.01	0.01	0
	August 16, 2012	0.3	0.11	60
	August 20, 2012	0.16	0.11	60
	August 22, 2012	0.12	0.09	60
	August 24, 2012	0.13	0.07	60
	August 26, 2012	0.14	0.13	60
	September 10, 2012	0.16	0.05	120
	September 28, 2012	0.04	0.02	60
October 12, 2012	0.14	0.09	60	
RG121.9	April 26, 2012	0.01	0.01	0
	May 13, 2012	0.25	0.08	120
	June 28, 2012	0.14	0.11	60
	July 02, 2012	0.18	0.08	60
	July 03, 2012	0.13	0.09	60
	July 04, 2012	0.11	0.07	60
	July 07, 2012	0.16	0.14	60
	July 10, 2012	0.01	0.01	0
	July 11, 2012	0.44	0.41	60
	July 13, 2012	0.01	0.01	0



**Attachment 3, Precipitation Network (continued)**

Rain Gage	Date	Total (In.)	Intensity (In./Min)	Duration (Min)
RG121.9	July 21, 2012	0.07	0.03	0
	July 24, 2012	0.05	0.02	0
	July 25, 2012	0.12	0.11	0
	August 02, 2012	0.23	0.11	60
	August 03, 2012	0.09	0.07	0
	August 05, 2012	0.05	0.02	0
	August 16, 2012	0.23	0.17	60
	August 20, 2012	0.26	0.14	60
	August 22, 2012	0.08	0.04	60
	August 24, 2012	0.03	0.02	0
	September 10, 2012	0.27	0.21	60
	September 27, 2012	0.03	0.02	0
	September 28, 2012	0.22	0.19	60
	October 12, 2012	1.07	0.26	240
RG200.5	May 13, 2012	0.22	0.08	120
	June 28, 2012	0.01	0.01	0
	July 02, 2012	0.03	0.01	0
	July 03, 2012	0.12	0.08	60
	July 04, 2012	0.1	0.08	60
	July 07, 2012	0.26	0.24	60
	July 10, 2012	0.01	0.01	0
	July 11, 2012	0.05	0.05	0
	July 21, 2012	0.01	0.01	0
	July 24, 2012	0.01	0.01	0
	July 25, 2012	0.15	0.14	0
	August 02, 2012	0.33	0.14	60
	August 05, 2012	0.09	0.06	60
	August 16, 2012	0.17	0.11	60
	August 20, 2012	0.22	0.14	60
	August 22, 2012	0.06	0.02	60
	August 24, 2012	0.04	0.04	0
	August 26, 2012	0.15	0.13	60
	September 10, 2012	0.19	0.14	60
	September 27, 2012	0.17	0.17	0
September 28, 2012	0.09	0.06	60	
October 12, 2012	0.74	0.38	120	

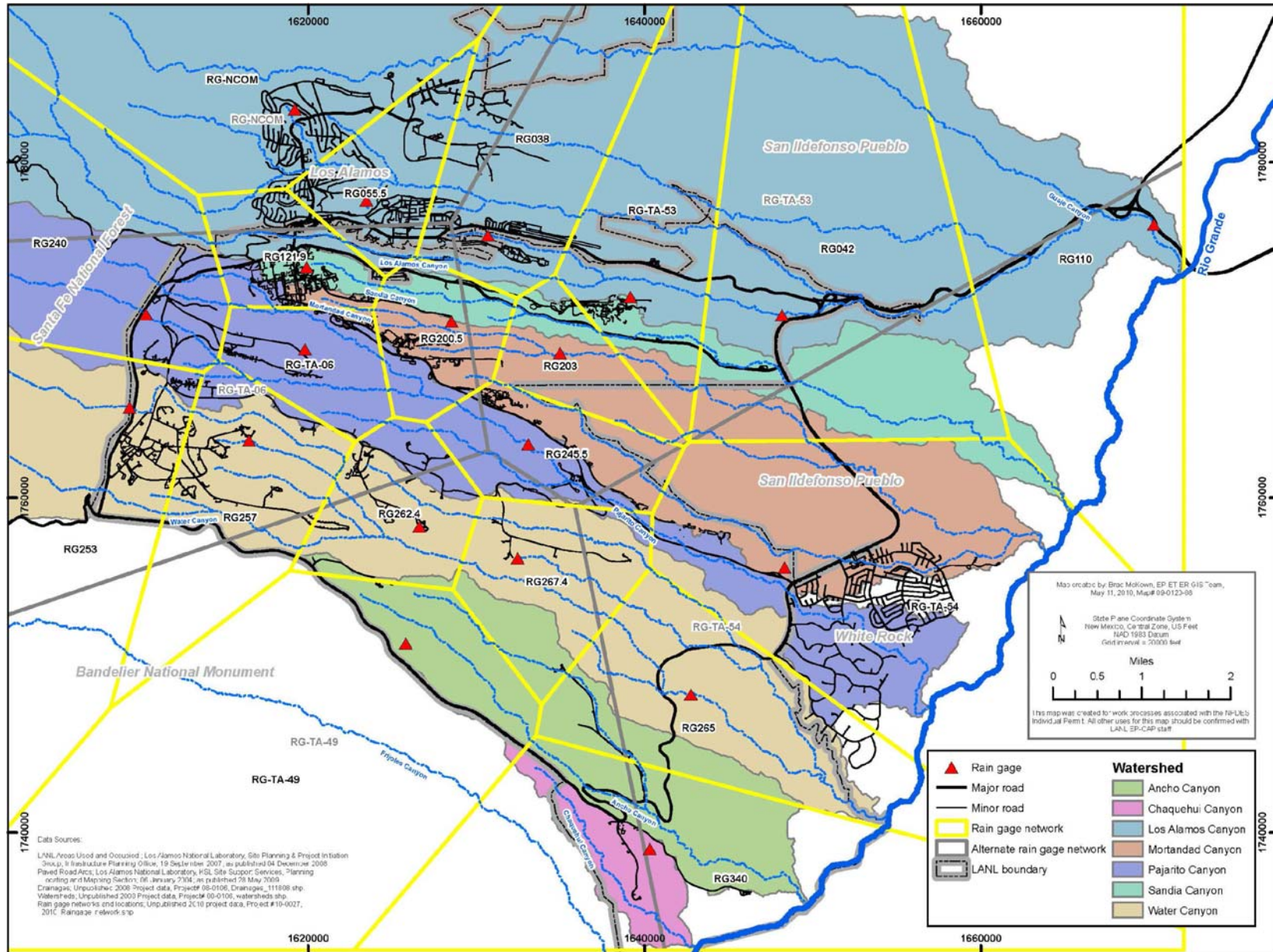
**Attachment 3, Precipitation Network (continued)**

<b>Rain Gage</b>	<b>Date</b>	<b>Total (In.)</b>	<b>Intensity (In./Min)</b>	<b>Duration (Min)</b>
RG203	April 26, 2012	0.51	0.34	60
	May 13, 2012	0.23	0.08	60
	July 02, 2012	0.04	0.01	0
	July 03, 2012	0.1	0.06	60
	July 04, 2012	0.07	0.05	60
	July 07, 2012	0.27	0.26	60
	July 10, 2012	0.01	0.01	0
	July 11, 2012	0.01	0.01	0
	July 21, 2012	0.05	0.03	0
	July 25, 2012	0.18	0.15	60
	August 02, 2012	0.29	0.11	60
	August 03, 2012	0.01	0.01	0
	August 05, 2012	0.33	0.27	60
	August 16, 2012	0.15	0.09	60
	August 20, 2012	0.05	0.03	0
	August 22, 2012	0.38	0.17	120
	August 24, 2012	0.15	0.06	60
	August 26, 2012	0.05	0.04	0
	September 10, 2012	0.09	0.07	60
	September 27, 2012	0.26	0.22	60
September 28, 2012	0.19	0.12	60	
October 12, 2012	0.55	0.28	120	
RG245.5	April 26, 2012	0.08	0.05	0
	May 13, 2012	0.11	0.03	60
	June 28, 2012	0.01	0.01	0
	July 02, 2012	0.03	0.01	0
	July 03, 2012	0.12	0.08	60
	July 04, 2012	0.1	0.06	60
	July 07, 2012	0.19	0.19	60
	July 11, 2012	0.01	0.01	0
	July 13, 2012	0.01	0.01	0
	July 25, 2012	0.08	0.05	0
	August 02, 2012	0.2	0.12	60
	August 05, 2012	0.24	0.19	60
	August 16, 2012	0.3	0.2	60
	August 20, 2012	0.22	0.15	60

**Attachment 3, Precipitation Network (continued)**

<b>Rain Gage</b>	<b>Date</b>	<b>Total (In.)</b>	<b>Intensity (In./Min)</b>	<b>Duration (Min)</b>
RG245.5	August 22, 2012	0.46	0.31	60
	August 24, 2012	0.16	0.11	60
	August 26, 2012	0.04	0.01	0
	September 10, 2012	0.23	0.12	60
	September 27, 2012	0.02	0.02	0
	September 28, 2012	0.15	0.11	60
	October 12, 2012	0.38	0.22	120

### Attachment 3, Precipitation Network (continued)



## Attachment 4 Physical Characteristics

Canyon	Permitted Feature	SMA Number	Sampler X Coordinate (Latitude)	Sampler Y Coordinate (Longitude)	SMA Drainage Area (ft <sup>2</sup> )	Site Number	Site Drainage Area (ft <sup>2</sup> )
Sandia	S001	S-SMA-0.25 <sup>1</sup>	1618998 (35.876233)	1774220 (-106.3223)	1,439,520.77	03-013(a) 03-052(f)	3,534.82 7.03
Sandia	S002	S-SMA-1.1 <sup>1,2</sup>	1620244.0533 (35.875976)	1774126.855221 (-106.318094)	326,096.40	03-029	6,983.73
Sandia	S003	S-SMA-2	1620125 (35.875167)	1773834 (-106.3185)	2,211,428.68	03-012(b) 03-045(b) 03-045(c) 03-056(c)	0.78 0.78 0.78 8,138.48
Sandia	S003A	S-SMA-2.01	1620394 (35.87295)	1773023 (-106.317583)	36,651.95	03-052(b)	1,160.69
Sandia	S004	S-SMA-2.8 <sup>1</sup>	1620634 (35.874933)	1773747 (-106.316783)	3,894.03	03-014(c2)	7.03
Sandia	S005	S-SMA-3.51	1620818 (35.873517)	1773232 (-106.31615)	816.64	03-009(i)	816.64
Sandia	S005A	S-SMA-3.52 <sup>1</sup>	1620742 (35.87385)	1773352 (-106.316417)	365.18	03-021	0.00
Sandia	S005B	S-SMA-3.53 <sup>1</sup>	1620873 (35.8753)	1773882 (-106.315967)	8,122.23	03-014(b2)	7.22
Sandia	S006	S-SMA-3.6 <sup>1</sup>	1621791 (35.873483)	1773219 (-106.312867)	311,515.13	60-007(b)	2,985.87
Sandia	S007	S-SMA-3.7	1633174 (35.868283)	1771323 (-106.27445)	138,639.08	53-012(e)	19.94
Sandia	S008	S-SMA-3.71	1633320 (35.869083)	1771609 (-106.27395)	8,569.13	53-001(a)	0.77
Sandia	S009	S-SMA-3.72	1633284 (35.86805)	1771234 (-106.274067)	11,118.90	53-001(b)	0.77
Sandia	S010	S-SMA-3.95	1636315 (35.865367)	1770255 (-106.26385)	3,671.30	20-002(a)	455.16
Sandia	S011	S-SMA-4.1 <sup>1</sup>	1636843 (35.8675)	1771035 (-106.262067)	13,554.34	53-014	181.24
Sandia	S012	S-SMA-4.5	1637389 (35.8639494)	1769755 (-106.2601048)	946.00	20-002(d)	13.00
Sandia	S013	S-SMA-5	1638094 (35.8637555)	1769672 (-106.2578407)	5,227.00	20-002(c)	982.00
Sandia	S014	S-SMA-5.2	1638251 (35.864067)	1769787 (-106.2573)	27,443.48	20-003(c)	168.47
Sandia	S015	S-SMA-5.5	1638979 (35.8630108)	1769464 (-106.2553901)	2,478.00	20-005	40.00
Sandia	S016	S-SMA-6	1641885 (35.86355)	1769600 (-106.24505)	12,203,808.89	72-001	0.77
Cañada del Buey	C001	CDB-SMA-0.15	1627975 (35.859817)	1768241 (-106.291983)	9,844.24	04-003(a) 04-004	0.00 0.77



**Attachment 4, Physical Characteristics (continued)**

Canyon	Permitted Feature	SMA Number	Sampler X Coordinate (Latitude)	Sampler Y Coordinate (Longitude)	SMA Drainage Area (ft <sup>2</sup> )	Site Number	Site Drainage Area (ft <sup>2</sup> )
Cañada del Buey	C002	CDB-SMA-0.25 <sup>1</sup>	1631127 (35.855617)	1766710 (-106.28135)	187,455.31	46-004(c2) 46-004(e2)	6,960.75 0.00
Cañada del Buey	C003	CDB-SMA-0.55 <sup>1</sup>	1631282 (35.855483)	1766662 (-106.280833)	202,180.86	46-004(g) 46-004(m) 46-004(s) 46-006(f)	5,831.49 5,069.44 1,678.86 4,172.51
Cañada del Buey	C004	CDB-SMA-1 <sup>1</sup>	1631615 (35.852933)	1765731 (-106.2797)	627,370.13	46-003(c) 46-004(d2) 46-004(f) 46-004(t) 46-004(w) 46-008(g) 46-009(a) C- 46-001	5,743.69 0.77 1.54 1.54 1.54 5,278.73 39,136.49 2.31
Cañada del Buey	C005	CDB-SMA-1.15	1631475 (35.855333)	1766608 (-106.280183)	66,985.38	46-004(b) 46-004(y) 46-004(z) 46-006(d)	107.59 1,303.15 2,203.33 11,496.54
Cañada del Buey	C006	CDB-SMA-1.35	1631690 (35.855117)	1766528 (-106.27945)	56,827.92	46-004(a2) 46-004(u) 46-004(v) 46-004(x) 46-006(d) 46-008(f)	3,015.74 1,725.98 1,920.24 7.97 2,536.78 1,822.09
Cañada del Buey	C007	CDB-SMA-1.54	1631772 (35.855183)	1766553 (-106.279167)	45,195.61	46-004(h) 46-004(q) 46-006(d)	7.12 7.22 1,492.20
Cañada del Buey	C008	CDB-SMA-1.55	1631930 (35.854333)	1766241 (-106.278633)	3,123.17	46-003(e)	531.64
Cañada del Buey	C009	CDB-SMA-1.65	1631973 (35.853567)	1765962 (-106.2785)	214.18	46-003(b)	139.98
Cañada del Buey	C010	CDB-SMA-4	1643546 (35.832883)	1758435 (-106.23945)	330,316.17	54-017 54-018 54-020	14,263.99 73,481.35 665.10
Mortandad	M001	M-SMA-1 <sup>1,2</sup>	1619925.0421 (35.870094)	1771986.24434 (-106.319166)	1,292,653.35	03-050(a) 03-054(e)	79,426.03 5,163.02
Mortandad	M002	M-SMA-1.2	1620720 (35.869917)	1771920 (-106.316483)	17,481.90	03-049(a)	16,266.72
Mortandad	M002A	M-SMA-1.21	1620503 (35.870683)	1772203 (-106.317217)	23,029.92	03-049(e)	2.67
Mortandad	M002B	M-SMA-1.22	1620251 (35.870633)	1772180 (-106.318067)	80,304.86	03-045(h)	16,506.92
Mortandad	M003	M-SMA-3	1623658 (35.866883)	1770815 (-106.306567)	16,340.05	48-001 48-005 48-007(c)	19,394.77 6,547.64 7.07
Mortandad	M004	M-SMA-3.1	1623815 (35.866933)	1770835 (-106.306033)	183.01	48-001 48-007(b)	183.01 0.00

**Attachment 4, Physical Characteristics (continued)**

Canyon	Permitted Feature	SMA Number	Sampler X Coordinate (Latitude)	Sampler Y Coordinate (Longitude)	SMA Drainage Area (ft <sup>2</sup> )	Site Number	Site Drainage Area (ft <sup>2</sup> )
Mortandad	M005	M-SMA-3.5 <sup>1</sup>	1624207 (35.866933)	1770831 (-106.304717)	29,761.90	48-001 48-003	18,092.48 2,473.93
Mortandad	M006	M-SMA-4 <sup>1</sup>	1624160 (35.8655)	1770312 (-106.304867)	327,735.93	48-001 48-005 48-007(a) 48-007(d) 48-010	317,281.54 13,656.97 103.70 902.48 6,130.81
Mortandad	M007	M-SMA-5	1625376 (35.864767)	1770044 (-106.300767)	25,355.12	42-001(a) 42-001(b) 42-001(c) 42-002(a) 42-002(b)	1,209.21 539.47 539.47 1,209.21 0.00
Mortandad	M008	M-SMA-6	1625840 (35.8637714)	1769988 (-106.2974438)	6,910.00	35-016(h)	7.00
Mortandad	M009	M-SMA-7 <sup>1</sup>	1625971 (35.864317)	1769879 (-106.29875)	10,688.02	35-016(g)	44.78
Mortandad	M010	M-SMA-7.9 <sup>1,2</sup>	1626177.5037 (35.864888)	1770087.465334 (-106.298059)	21,055.76	50-006(d)	6,336.71
Mortandad	M011	M-SMA-9.1	1627083 (35.864)	1769767 (-106.295)	9,007.31	35-016(f)	56.59
Mortandad	M012	M-SMA-10	1627304 (35.864517)	1769950 (-106.29425)	63.00	35-008 35-014(e)	3,378.65 11,885.37
Mortandad	M012A	M-SMA-10.01 <sup>1,2</sup>	1627372.209 (35.864695)	1770016.713179 (-106.294026)	7,859.66	35-016(e)	11.59
Mortandad	M013	M-SMA-10.3	1627627 (35.86465)	1769999 (-106.293167)	108,863.64	35-014(e2) 35-016(i)	808.25 48.80
Mortandad	M014	M-SMA-11.1 <sup>1</sup>	1628379 (35.86395)	1769747 (-106.290633)	4,331.00	35-016(o)	979.43
Mortandad	M015	M-SMA-12 <sup>1</sup>	1628788 (35.86355)	1769600 (-106.28925)	8,650.16	35-016(p)	34.85
Mortandad	M016	M-SMA-12.5	1632483 (35.8579)	1767544 (-106.276783)	21,601.36	05-005(b) 05-006(c)	1,351.84 102.81
Mortandad	M017	M-SMA-12.6	1633157 (35.857717)	1767475 (-106.2745)	24,968.29	05-004	276.18
Mortandad	M018	M-SMA-12.7	1634294 (35.859233)	1768023 (-106.270667)	44,313.61	05-002 05-005(a) 05-006(b) 05-006(e)	3,397.13 3,258.27 651.29 731.88
Mortandad	M019	M-SMA-12.8	1634423 (35.859183)	1768007 (-106.270233)	24,955.90	05-001(a) 05-002	5,322.52 5,521.99
Mortandad	M020	M-SMA-12.9	1634709 (35.858767)	1767858 (-106.269267)	4,417.16	05-001(b) 05-002	1,066.37 2,083.83
Mortandad	M021	M-SMA-12.92	1634976 (35.860867)	1768620 (-106.268367)	27,271,277.04	00-001	89,828.44

**Attachment 4, Physical Characteristics (continued)**

Canyon	Permitted Feature	SMA Number	Sampler X Coordinate (Latitude)	Sampler Y Coordinate (Longitude)	SMA Drainage Area (ft <sup>2</sup> )	Site Number	Site Drainage Area (ft <sup>2</sup> )
Mortandad	M022	M-SMA-13	1635856 (35.857067)	1767236 (-106.265383)	178,918.24	05-001(c)	88,139.45
Ten-Site	T001	Pratt-SMA-1.05	1629362 (35.862167)	1769096 (-106.2873)	441,552.83	35-003(h) 35-003(p) 35-003(r) 35-004(h) 35-009(d) 35-016(k) 35-016(l) 35-016(m)	296.75 9,123.84 37,468.17 50.03 1,166.43 787.48 128.28 104.57
Ten Site	T002	T-SMA-1	1626460 (35.861483)	1768848 (-106.2971)	610,151.64	50-006(a) 50-009	2,069.34 305,022.50
Ten Site	T003	T-SMA-2.5	1627208 (35.861883)	1768992 (-106.294583)	2,437.93	35-014(g3)	2,400.23
Ten Site	T004	T-SMA-2.85	1627468 (35.862067)	1769059 (-106.2937)	13,508.69	35-014(g) 35-016(n)	45.45 33.82
Ten Site	T005	T-SMA-3	1627617 (35.861817)	1768971 (-106.2932)	122,397.15	35-016(b)	21.83
Ten Site	T006	T-SMA-4 <sup>1</sup>	1627879 (35.861683)	1768917 (-106.292317)	126,172.00	35-004(a) 35-009(a) 35-016(c) 35-016(d)	71.63 319.36 24.30 28.24
Ten Site	T007	T-SMA-5	1628092 (35.861517)	1768857 (-106.2916)	80,932.13	35-004(a) 35-009(a) 35-016(a) 35-016(q)	0.00 573.58 1,199.97 1,026.72
Ten Site	T008	T-SMA-6.8	1630395 (35.86165)	1768907 (-106.283817)	218.20	35-010(e)	6.94
Ten Site	T009	T-SMA-7	1630663 (35.861183)	1768735 (-106.282917)	46,873.35	04-003(b)	10,542.24
Ten Site	T010	T-SMA-7.1	1630767 (35.86095)	1768651 (-106.282567)	19,644.64	04-001 04-002	11,424.02 4,967.88

<sup>1</sup> Site boundary revised.

<sup>2</sup> Minor sampler movement.

# Attachment 5 Sampling Requirements and Plan

## Sampling and Analysis Requirements

Sampling Conditions	Analytical Suite												
	Gross Alpha	Ra-226/ Ra-228	Cyanide	Dissolved Metals	Total Metals	Aluminum	Copper	Zinc	PCBs	High Explosives	Dioxins/ Furans	Pesticides	SVOCs
Analytical method	EPA 900.0	EPA 903.0 EPA 904.1	SM 4500 CN-I	EPA:200.7 EPA:200.8	EPA:200.7 EPA:200.8 EPA:245.2	EPA:200.8	EPA:200.8	EPA:200.8	EPA 1668A	SW8321	EPA 1613B	EPA 608	EPA 625
Order code	SW-IP- Gross Alpha	SW-Ra226/ Ra-228	SW-IP- Cyanide	SW-Metals- Dissolved	SW-Metals- Total	SW-IP-Al F	SW-IP-Cu F	SW-IP-Zn F	SW-PCB- 1668A-PQL	SW-HEXP- 8330	SW-IP-D/F- 1613B	SW-Pesticides	SW-SVOC-625
Field prep code	UF	UF	UF	F	UF	F	F	F	UF	UF	UF	UF	UF
Preservation	HNO <sub>3</sub>	HNO <sub>3</sub>	NaOH, Ice	HNO <sub>3</sub>	HNO <sub>3</sub>	HNO <sub>3</sub>	HNO <sub>3</sub>	HNO <sub>3</sub>	Ice	Ice	Ice	Ice, store some analytes in dark	Ice, store some analytes in dark
Holding time (days)	180	180	14	180	180	180	180	180	365	7	365	7	7
Preferred volume (L)	2	2	1	0.5	0.5	0.5	0.5	0.5	3	2.5	2	3	3
Minimum volume required (L)	1	2	0.5	0.25	0.25	0.25	0.25	0.25	1	0.77	1	1	1
Shipping container	Poly	Poly	Poly	Poly	Poly	Poly	Poly	Poly	Glass	Glass	Glass	Amber glass	Amber glass

UF = Unfiltered.

F = Filtered.

## Attachment 5, Sampling Requirements and Plan (continued)

### Sampling and Analysis Plan

Permit SMA Number	SDPPP Section	Station Name	Stage	Gross Alpha	Ra-226/Ra-228	Cyanide	Dissolved Metals	Total Metals	Aluminum	Copper	Zinc	PCBs	High Explosives	Dioxins/Furans	Pesticides	SVOCs
S-SMA-0.25	65	SS091601	CAI													
S-SMA-1.1	66	SS121634	CAM3	X	X	X	X	X				X				
S-SMA-2	67	SS101626	CAI													
S-SMA-2.01	68	SS091602	CAM3							X		X				
S-SMA-2.8	69	SS091621	MEx	X	X	X	X	X				X				X
S-SMA-3.51	70	SS091603	MEx	X	X	X	X	X				X				X
S-SMA-3.52	71	SS091604	MEx	X	X	X	X	X				X				X
S-SMA-3.53	72	SS091605	CAI													
S-SMA-3.6	73	SS12255	CAM3							X	X	X	X			
S-SMA-3.7	74	SS091620	MEx	X	X	X	X	X				X				
S-SMA-3.71	75	SS091610	MEx	X	X	X	X	X				X				
S-SMA-3.72	76	SS091611	MEx	X	X	X	X	X				X				
S-SMA-3.95	77	SS091606	MEx	X	X	X	X	X					X			X
S-SMA-4.1	78	SS101623	CAM3									X				
S-SMA-4.5	79	SS101624	MEx	X	X	X	X	X					X			
S-SMA-5	80	SS111627	MEx	X	X	X	X	X				X	X			
S-SMA-5.2	81	SS101625	MEx	X	X	X	X	X				X	X			X
S-SMA-5.5	82	SS091619	MEx	X	X	X	X	X								
S-SMA-6	83	SS1248	CAI													
CDB-SMA-0.15	84	SS091310	MEx	X	X	X	X	X								
CDB-SMA-0.25	85	SS091311	CAM5						X	X		X				X



## Attachment 5, Sampling Requirements and Plan (continued)

### Sampling and Analysis Plan (continued)

Permit SMA Number	SDPPP Section	Station Name	Stage	Gross Alpha	Ra-226/Ra-228	Cyanide	Dissolved Metals	Total Metals	Aluminum	Copper	Zinc	PCBs	High Explosives	Dioxins/Furans	Pesticides	SVOCs
CDB-SMA-0.55	86	SS091312	MEx	X	X	X	X	X				X				X
CDB-SMA-1	87	SS2185	CAM5	X					X	X		X				
CDB-SMA-1.15	88	SS091313	MEx	X	X	X	X	X				X				
CDB-SMA-1.35	89	SS091314	MEx	X	X	X	X	X				X			X	X
CDB-SMA-1.54	90	SS091315	MEx	X	X	X	X	X				X			X	
CDB-SMA-1.55	91	SS091316	MEx	X	X	X	X	X								
CDB-SMA-1.65	92	SS091309	MEx	X	X	X	X	X								
CDB-SMA-4	93	SS101317	MEx	X	X	X	X	X				X		X		X
M-SMA-1	94	SS121238	CAM5	X	X	X	X	X				X				
M-SMA-1.2	95	SS091202	MEx	X	X	X	X	X								
M-SMA-1.21	96	SS091227	MEx	X	X	X	X	X								
M-SMA-1.22	97	SS091228	CAI													
M-SMA-3	98	SS1985	MEx	X	X	X	X	X				X				
M-SMA-3.1	99	SS192	MEx	X	X	X	X	X				X				
M-SMA-3.5	100	SS193	MEx	X	X	X	X	X				X				
M-SMA-4	101	SS1987	CAI													
M-SMA-5	102	SS199	MEx	X	X	X	X	X				X				
M-SMA-6	103	SS111234	CAI													
M-SMA-7	104	SS1992	CAI													
M-SMA-7.9	105	SS121237	MEx	X	X	X	X	X				X				
M-SMA-9.1	106	SS101231	MEx	X	X	X	X	X				X				

## Attachment 5, Sampling Requirements and Plan (continued)

### Sampling and Analysis Plan (continued)

Permit SMA Number	SDPPP Section	Station Name	Stage	Gross Alpha	Ra-226/Ra-228	Cyanide	Dissolved Metals	Total Metals	Aluminum	Copper	Zinc	PCBs	High Explosives	Dioxins/Furans	Pesticides	SVOCs
M-SMA-10	107	SS2002	MEx	X	X	X	X	X								
M-SMA-10.01	108	SS121235	CAM5	X	X	X	X	X								
M-SMA-10.3	109	SS20025	CAI													
M-SMA-11.1	110	SS101232	MEx	X	X	X	X	X				X				
M-SMA-12	111	SS2004	MEx	X	X	X	X	X				X				
M-SMA-12.5	112	SS2055	MEx	X	X	X	X	X					X			X
M-SMA-12.6	113	SS2058	MEx	X	X	X	X	X					X			X
M-SMA-12.7	114	SS2023	MEx	X	X	X	X	X					X			X
M-SMA-12.8	115	SS2024	MEx	X	X	X	X	X					X			X
M-SMA-12.9	116	SS2032	MEx	X	X	X	X	X					X			
M-SMA-12.92	117	SS101233	MEx	X	X	X	X	X								
M-SMA-13	118	SS205	MEx	X	X	X	X	X					X			
Pratt-SMA-1.05	119	SS093401	MEx	X	X	X	X	X				X				
T-SMA-1	120	SS093713	CAI													
T-SMA-2.5	121	SS103715	MEx	X	X	X	X	X								
T-SMA-2.85	122	SS093714	MEx	X	X	X	X	X								
T-SMA-3	123	SS20134	CAI													
T-SMA-4	124	SS20136	MEx	X	X	X	X	X								
T-SMA-5	125	SS20138	MEx	X	X	X	X	X								
T-SMA-6.8	126	SS103716	MEx	X	X	X	X	X								

## Attachment 5, Sampling Requirements and Plan (continued)

### Sampling and Analysis Plan (continued)

Permit SMA Number	SDPPP Section	Station Name	Stage	Gross Alpha	Ra-226/Ra-228	Cyanide	Dissolved Metals	Total Metals	Aluminum	Copper	Zinc	PCBs	High Explosives	Dioxins/Furans	Pesticides	SVOCs
T-SMA-7	127	SS20143	MEx	X	X	X	X	X								
T-SMA-7.1	128	SS103717	MEx	X	X	X	X	X								

CAI = Corrective Action Initiated: A sample was collected during baseline confirmation monitoring, and analytical results show at least one pollutant concentration is above TAL, resulting in initiation of corrective action.

CAM3 = Following completion of enhanced control measures at a high priority site, one or more samples will be collected within 3 yr of effective date of the IP.

MEx = Extended Baseline Monitoring: One confirmation monitoring sample will be collected to determine if corrective action is required.

CAM5 = Corrective Action Enhanced Control Monitoring: Two confirmation monitoring samples will be collected following completion of corrective action control measures at moderate priority sites within 5 yr of effective date of the IP.